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UNIVERSITY OF ALBERTA

SOCIAL BEHAVIOR OF CHILDREN WITH SEVERE HANDICAPS

BY

ELIZABETH C. MARRYAT HOLT

(C)

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND

RESEARCH IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION

IN

SPECIAL EDUCATION - SEVERE DISABILITIES

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

FALL 1990

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THE UNDERSIGNED CERTIFY THEY HAVE READ, AND RECOMMEND TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH FOR ACCEPTANCE, A THESIS ENTITLED THE SOCIAL BEHAVIOR OF CHILDREN WITH SEVERE HANDICAPS

SUBMITTED BY ELIZABETH C. MARRYAT HOLT

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION

IN SEVERE DISABILITIES

EDUCATIONAL PSYCHOLOGY

Dr. D. Baine, Supervisor

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Abstract

This document examines the relationship between homogeneous and heterogeneous groupings of students in an integrated recess program. An alternating treatments design was used to determine changes in the frequency and type of interactions between students with severe handicaps and their peers. The treatments were repeated across four subjects having severe and multiple handicaps. Treatment A was a heterogeneous grouping of students where a student with severe handicaps was paired with a nonhandicapped buddy during recess. In the homogeneous treatment B, a student with severe handicaps was paired with a similarly handicapped buddy during recess. Results agree with the previous research on the frequency of interactions between children with handicaps and their nonhandicapped peers. The frequency of interactions between the students was greater in the heterogeneous than in the homogeneous grouping of students. The study also examined the types of interactions according to how the child with severe handicaps initiated and responded to interactions with the respective handicapped and nonhandicapped buddy and how the buddy

initiated and responded to the subjects. The manner in which initiation or response occurred was recorded according to vocal (e.g., words, sounds), visual, and motor (e.g., waves, eye gaze, physical proximity, gesture, and moving head) behaviors. Differences were found in the manner in which students with severe handicaps initiated and acknowledged initiations as compared with the manner in which nonhandicapped students initiated and acknowledged initiations. Other differences noticed between the groupings indicated that students in the heterogeneous groupings interacted for a longer period of time, and engaged in social turn-taking, while a greater percentage of interactions between staff and students occurred in the homogeneous groupings.

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TABLE OF CONTENTS

CHAPTER I

Introduction to the Problem.....1

CHAPTER II

Review of the Literature.....6
Social Behavior of Children with Severe Handicaps.....6
Interactions between Children with Severe Handicaps and Nondisabled Peers.....13
Coding Social Interactions.....28
Conclusions.....38

CHAPTER III

Statement of the Problem.....40

CHAPTER IV

Method.....44
Introduction.....44
Selection of Subjects.....44
Volunteers.....52
Setting and Materials.....53
Experimental Design.....53
Definitions of Variables.....59
Procedure.....62

CHAPTER V

Results.....71
Social Interactions between Peers.....72
Type of Interaction.....107
Duration of Interactions.....125
Social Turn-taking.....127
Interactions with Staff.....130
Individual Subject's Results.....133
Conclusions.....140

CHAPTER VI

Discussion.....143

References.....158

Appendix.....171

List of Tables

Page

Table 1. Schedule of random presentations of conditions for recess for four subjects.....64

Table 2. Within condition analysis of subject 1's responses under two conditions.....75

Table 3. Between condition analysis of four subjects comparing two conditions.....95

Table 4. Percentage of initiations and acknowledgements using motor, vocal, and visual behaviors or a combination of behaviors for subject 1 in heterogeneous and homogeneous groups.....109

Table 5. Percentage of initiations and acknowledgements using motor, vocal, and visual behaviors, or a combination of behaviors for subject 2 in heterogeneous and homogeneous groups.....113

Table 6. Percentage of initiations and acknowledgements using motor, vocal, and visual behaviors, or a combination of behaviors for subject 3 in heterogeneous and homogeneous groups.....117

Table 7. Percentage of initiations and acknowledgements using motor, vocal, and visual behaviors, or a combination of behaviors for subject 4 in heterogeneous and homogeneous groups.....120

Table 8. Mean duration of interactions during 5 minutes of play.....126

Table 9. Number of turns taken by each subject during five minutes of play in heterogeneous and homogeneous groups....129

Table 10. Interactions with partners, staff, and others as a percentage of total interactions in heterogeneous and homogeneous groups.....131

List of Figures

Figure 1. Estimation of trend direction for subject 4.....76

Figure 2. Percentage of initiations acknowledged by subject 1 and partners in heterogeneous and homogeneous groups.....80

Figure 3. Percentage of initiations acknowledged by subject 2 and partners in heterogeneous and homogeneous groups.....82

Figure 4. Percentage of initiations acknowledged by subject 3 and partners in heterogeneous and homogeneous groups.....84

Figure 5. Percentage of initiations acknowledged by subject 4 and partners in heterogeneous and homogeneous groups.....85

Figure 6. Mean level line and range of level stability for subject 4.....90

CHAPTER I

Introduction to the Problem

Social integration of students with severe handicaps is a major concern now that many educators advocate access to public schools and community settings for persons with severe handicaps (Browder & Martin, 1986; Brown, Branston-McClean, Baumgart, Vincent, Falvey, & Schroeder, 1979; Hemphill, 1983; Sailor, 1989). Despite the overwhelming conclusions that integrated environments are more conducive for social interactions between handicapped and nonhandicapped people (Brinker, 1985; Brinker & Thorpe, 1984; Little, 1985), the lack of social skills among people with severe handicaps is often a major hindrance to being socially integrated in schools or within the wider community (Dickinson, 1987; Ludlow, Turnbull, & Luckasson, 1988).

Social skills develop through an interactive process between people in a variety of environments. Nonhandicapped children, as they grow, have many varied opportunities for interaction with adults and children. Many children with severe handicaps do not have the

same access as nonhandicapped children to a variety of interactive settings with adults and children. Often children with severe handicaps do not spontaneously seek interactions with others even if they have access to environments where there are opportunities to interact with a number of people. Research clearly indicates that educators need to ensure that students with severe handicaps from an early age share unstructured as well as structured experiences with their nonhandicapped peers and that intervention techniques are used to facilitate appropriate interactions between handicapped and nonhandicapped children.

The effects of integration programs on interactic frequencies, attitudes, and types of play between handicapped and nonhandicapped peers presents encouraging support for educating handicapped and nonhandicapped children in the same settings. However, many educators and practitioners are not convinced that educating children with the most severe handicaps in environments with their nonhandicapped peers is justified. The mystery that tends to surround teaching

children with severe handicaps has helped to isolate them from the life of the school. Maladaptive behaviors that are often disruptive, characteristic of children with the most severe handicaps, have led to assumptions that children with severe handicaps lack the ability and/or motivation to engage in interactions with people.

The noticeable absence of children with the most severe handicaps from the educational life of all children has had significant impact upon children with handicaps, nonhandicapped children, and teachers. Children with the most severe handicaps have not had opportunities to interact with peers during the school years, nonhandicapped children have not had opportunities to observe, learn about, and befriend children with severe handicaps, and teachers have not had opportunities to observe the social behavior of children with severe handicaps and interactions that may occur between handicapped and nonhandicapped children. Now school administrators, teachers, and children are unprepared for the recent move to educate children with the most severe handicaps in their least

restrictive environments. Although research is beginning to provide direction for school personnel, there is still a need to expand the research in special education in the area of integrating children with severe handicaps into the life of regular schools.

The present study adds to the expanding body of literature on integrating children with severe handicaps with nonhandicapped students by examining the major differences in the social effects of integration on the interactive behavior of students with severe handicaps and their nonhandicapped and handicapped peers. Two questions were posed: a) is there a difference in how often children with severe handicaps interact with their nonhandicapped peers as compared to their handicapped peers, and b) is there a difference in the manner in which children with severe handicaps initiate and acknowledge interactions when they are paired with handicapped students in contrast to nonhandicapped students. The importance of this research was to add to the body of published research in the area of social behavior and children with severe handicaps.

A secondary focus of this study was to present a method of providing integrated experiences for children with severe handicaps and their nonhandicapped peers that would use naturally scheduled school routines. Integrating children into the life of the school is often omitted because teachers feel they do not have the time to spend developing programs that would facilitate integration and teach functional skills to their students. This study illustrates how a recess period can be used to bring handicapped and nonhandicapped children together.

The review of the literature discusses the social behavior of children identified as having severe mental handicaps, an overview of the research on the interactions that occur between handicapped and nonhandicapped peers, and a sample of methods that have been used to code social interactions between handicapped and nonhandicapped children. The rationale and the specific research questions follow the review of the literature.

CHAPTER II

Review of the Literature

Social Behavior of Children with Severe Handicaps

Maladaptive behavior is often used to characterize persons having a mental handicap (Gottlieb & Leyser, 1982) while inadequate social behavior is used to distinguish people with mild or moderate mental handicaps from persons with severe mental handicaps (Wacker & Hoffmann, 1984). The American Association on Mental Deficiency identified persons with severe and profound mental handicaps as having significantly below average general intellectual functioning and significant deficits in adaptive behavior (Wacker & Hoffmann, 1984). Other definitions of persons having severe multiple handicaps included descriptions such as maladaptive behavior patterns, insensitivity to social interactions (Dingman, 1973), and limited social skills (Renzaglia & Bates, 1983).

According to Gaylord-Ross, Stremel-Campbell, and Storey, (1986) "social skills are the behaviors that enable two or more persons to have direct interactions with each other" (p. 162). A number of skills have

been identified that are necessary to accomplish an interaction. For example, to interact with others, a person must be able to decode messages, communicate socially (greet, praise, question, etc.), decode and encode a range of nonverbal cues (eye contact, facial expression), demonstrate independence when alone in a social setting (Renzaglia & Bates, 1983), and have an intention to interact (Harris, 1982).

Children with severe multiple handicaps display inappropriate responses to social cues, and/or maladaptive behaviors identified as self-injurious, self-abusive, withdrawn or violent. Some children with severe multiple handicaps engage in a variety of repetitive stereotypic behaviors that prohibit attention to salient social cues. Some children with severe handicaps may lack an adequate communication system that allows for social interaction. Often several basic skills required for social behavior (for example, good eye contact,) have not developed in children with severe and multiple handicaps (Wacker & Hoffmann, 1984).

An absence of speech and impaired receptive and expressive abilities that characterize children with severe handicaps, result in little or no verbal communication. Sometimes physical impairments impede the abilities of children with severe and multiple handicaps to use common gestures and movements for communicative purposes. The lack of speed in executing a movement, often seen in the movements of children with severe handicaps, may hinder communicative messages. Difficulties with communication are sometimes incorrectly equated with an inability to communicate, when actually the person is able to communicate but must use alternate means of communicating (Certo & Kohl, 1984).

Although many children with severe handicaps are labelled as having maladaptive social behavior, in most instances, it is not that children with severe multiple handicaps are incapable of social behavior, but that children with severe multiple handicaps lack opportunities to learn appropriate social skills (Murray-Seegert, 1989). Certo and Kohl (1984) and Fendis (1982) suggested that the social skills children

with severe handicaps have learned reflect the demands of the environments the children have experienced. Often these environments have an overabundance of similarly handicapped children with a few models of appropriate social behavior.

Social experience plays an important role in the development of appropriate social skills (Appolloni & Cooke, 1974). Many times, children with severe handicaps have had little opportunity to interact with peers because they have been raised apart from nonhandicapped children in institutions or homes for handicapped people (Renzaglia & Bates, 1983), and educated in schools where an absence of nonhandicapped students is noticeable. Segregated settings limit the number and variety of people available for social interaction.

Living and learning in a segregated environment usually means socializing with people who have similar handicaps. Frequent fraternizing with the same crowd can encourage the development of a routine that does not promote flexibility. Social skills required outside the segregated environments are not used.

Therefore, the opportunity to teach social skills needed to be socially competent in other environments, never occurs.

Even the necessary social skills required within segregated environments may go untaught. For example, Fendis (1982) suggested that skills required to get along with others are not always included in programs specifically designed for persons with severe handicaps, even though persons with severe handicaps tend to live in large groups in institutional or residential settings where cooperation is necessary. Labels such as "behavior problems" may have been unfairly attached to persons with severe handicaps when, in actual fact, the "problem behaviors" may have been expressions of frustration and anger (Fendis, 1982).

Research has shown that teaching social skills to students with severe handicaps can improved their social behavior (Donder & Nietupski, 1981; Haring, Breen, & Gaylord-Ross, 1984; Matson, Manikam, Coe, Raymond, Taras, & Long, 1988; Russo & Koegel, 1977; Wacker & Hoffman, 1984). However, many social skills

are taught in isolation, or within the context of activities that are tailored for individuals who are handicapped. Such activities are often repetitive, inappropriate for the chronological age of the children, and segregated from nonhandicapped children.

Teaching social skills in segregated settings may only improve behavior in the segregated setting. Children with severe handicaps must also be taught to generalize skills from one environment to another by practicing social skills in the natural environment with naturally occurring social cues. The more environments the child with severe handicaps becomes familiar with, the more opportunity there will be to learn and practice appropriate social skills (Brady, McEvoy, Gunter, Shores, & Fox, 1984).

Isolation from nonhandicapped peers in natural environments has had a profound effect both on the social skills of children with severe mental handicaps and the manner in which children with severe mental handicaps are perceived by the general population. Negative attitudes towards people who appear physically different or act different develop when the person is

perceived as socially incompetent, perhaps because of poor communication skills (Gottlieb & Leyser, 1982), or a lack experience in social situations. The more proficient a person appears in a particular context, the less stigmatized the person will be (Fendis, 1982; Gaylord-Ross & Peck, 1985; Renzaglia & Bates, 1983).

In summary, social behavior is often described as maladaptive for children with severe handicaps. However, some of the maladaptive social behaviors demonstrated by such children may be related to the types of social models and environments the children experience. Children with severe handicaps need to be taught functional social skills (Fendis, 1982) in environments where the skills will be used (Certo & Kohl, 1984; Hemphill, 1983), and where children with severe handicaps have opportunities to interact with children who model appropriate social behavior (Certo & Kohl, 1984). However, the problem remains that from an early age many children with severe handicaps do not have access to a variety of environments that are rich with the opportunity to interact with many of their peers. The challenge for educators is to ensure that

children with severe multiple handicaps have opportunities throughout their school years to develop appropriate social behavior.

Interactions between Children with Severe Handicaps and Nondisabled Peers

Opportunities for interactions. Until recently, handicapped children were rarely educated in close physical proximity to their nondisabled peers. The presence of handicapped children in regular education schools is increasing and now there is a movement to place handicapped children with more heterogeneous groupings of students. Researchers are providing the impetus for educators to realize that nonhandicapped and handicapped children need many opportunities to interact with each other. Brown, Branston-McClean, Baumgart, Vincent, Falvey, and Schroeder (1979) argued that if all students must be prepared to live in an integrated society, the need for interaction between handicapped and nonhandicapped children is as necessary for the children without handicaps as it is for the children with handicaps.

Schools play an important role in the socialization of children. Socialization involves contact with a variety of people at different developmental ages and levels as well as the fostering of peer relationships (Hartup, 1978; Vernon, 1965). There is a strong need for socialization during childhood (Sailor, 1989). During childhood, playing with peers is important for developing and practicing social skills, learning group norms, and building friendships. As Hartup so aptly stated, "Peer relationships are not luxuries in human development, they are necessities" (Hartup, 1978, p. 28).

The literature on development during infancy, early, and later childhood, underlines the importance of social interactions for normal development (Appoloni & Cooke, 1975, Hartup, 1980). Hartup (1978) states that "current evidence shows that without an opportunity to interact with other children, children have difficulty in learning effective communication skills, modulating aggressive feelings, accommodating to social demands for appropriate sexual behavior, and forming a coherent set of moral values" (p.28).

Interactions with peers are critical to the development of all children, whether or not the pattern of their development has been affected by disabilities.

Research is beginning to demonstrate positive effects of educating disabled and nondisabled children in common environments. Brinker and Thorpe (1984) found that degree of integration, measured by frequency of interaction with nonhandicapped peers, was a significant predictor of students with severe handicaps attaining goals in their Individualized Educational Plans. Based upon the results of the 1984 study, Brinker and Thorpe have suggested that integrating students with severe handicaps with their nonhandicapped peers is an important component of the education of students with severe handicaps.

There are many reasons that children with severe and multiple handicaps have limited opportunities to interact with peers and develop peer relationships. Lack of contact with a variety of children often occurs because of placement in segregated classes where the interactions are predominantly directed by adults. Adult-child interactions are characterized by different

norms, and usually have a "supervisory" component where one person is to "look after" the other (Hartup, 1978). Playing with adults is also not a replacement for playing with peers. Adults are usually role-playing, when they "play" with young children (Hartup, 1978).

There are other factors that prevent children with severe handicaps from developing peer relationships. Often children with severe handicaps are not motivated to interact with people or they lack a functional communication system that enables spontaneous interactions. The lack of support from parents and/or educators for children with severe handicaps to participate in integrated environments also keeps handicapped and nondisabled children from building friendships.

It is difficult to look beyond fears of teasing or being socially ostracized even though recent research into the attitudes of nondisabled students towards their handicapped peers has concluded that attitudes toward handicapped peers become more positive with an increase in contact with handicapped peers (Fenrick & Petersen, 1984; Voeltz, 1980, 1982, 1984).

Furthermore, a high rate of direct contact with handicapped peers seems to be the necessary ingredient associated with nondisabled students' positive acceptance of handicapped peers (Brady, McEvoy, Gunter, Shores, & Fox, 1984). Voeltz's (1980; 1982) research on the attitudes of nonhandicapped children towards their handicapped peers identified scheduled social contact as the most salient predictor in developing successful integration programs. Schools are one setting that can provide both the opportunities for interactions between handicapped and nonhandicapped students and the instructors needed to ensure that handicapped students become socially integrated with their peers.

Special educators agree that students with severe handicaps need opportunities for interacting with nonhandicapped peers, although the amount of time that should be allotted to this activity is still disputed. Achieving a balance between the special services found in the educational programs for children with severe handicaps and integrating with nonhandicapped peers is a challenge for teachers.

Some supporters of integrated education support a full inclusion model (Sailor, 1989). However, many teachers, parents and administrators are not ready for the impact full inclusion puts on educational programs. The form that integration takes for the multiply handicapped student depends upon the goals set for the student. Hill and Whiteley (1986) found that when children with multiple handicaps were in classes with their nondisabled peers, more interactions occurred between children with multiple handicaps and teachers/aides than occurred between the children with multiple handicaps and their nondisabled peers. More research needs to be conducted into the outcomes of integration for students with severe handicaps.

Stainback and Stainback (1982) suggested that integration begin by co-ordinating schedules for the special education classes with schedules for the entire school, for example, arriving and leaving at the same time, taking recess at the same time and in the same environment, and attending assemblies and special events together. In addition, special education classes could be placed throughout the school instead

of in a separate wing of the school. Special and regular education classes could participate in joint activities and/or projects where regular education students become tutors or buddies to students with severe handicaps. The goal in any integration project should be to bring special education students into the daily functioning of the school.

It is important that all children have the opportunity to develop peer relationships in order to learn and practice social competence and appropriate social behaviors (Hartup, 1978). The degree of handicap in children should not determine the amount of contact they have with their nondisabled peers. Children with mild or moderate mental handicaps have been successfully integrated into school programs with nondisabled peers. Although more research is now being conducted with children who have severe handicaps, the benefits of integration can not be determined until those students are integrated. It is still a challenge for educators to integrate students with severe handicaps.

Until recently, special education curricula did not effectively address the development of social skills in children with severe handicaps. Now it seems that providing opportunities for handicapped and nondisabled students to initiate and sustain interactions may be the most important element of teaching social skills and integrating handicapped children into public schools (Certo & Kohl, 1984; Hemphill, 1983; Stainback, Stainback, & Jaben, 1983). As the education of children with severe handicaps moves from a developmental curriculum to a more functional curriculum, opportunities for children with severe handicaps to interact with their nonhandicapped peers should increase.

Promoting interactions. Once students with severe handicaps are given opportunities to interact with nondisabled peers, knowledge of a variety of instructional techniques that can be used to promote social interactions between children is necessary. The mere presence of handicapped and nonhandicapped students in the same setting does not guarantee social integration, although it is one step toward providing

opportunities for interaction between handicapped and nonhandicapped students (Brady, McEvoy, Gunter, Shores, & Fox, 1984). Research has found that nonhandicapped students chose to interact with their nonhandicapped peers over handicapped peers (Guralnick, 1980; Stainback & Stainback, 1982). One possible reason for this preference may be that nonhandicapped children might be unsure how to interact with students who have handicaps, especially when the handicap is perceived as severe. Stainback and Stainback (1981) have proposed that reluctance of nonhandicapped students to interact with handicapped students may indicate the need for more systematic interventions to promote interactions between nonhandicapped children and their peers who have severe handicaps.

Promoting social interactions between children with severe handicaps and their nonhandicapped peers requires both physical proximity and systematic procedures to encourage interaction (Stainback, Stainback, Raschke, & Anderson, 1981; Voeltz, 1980; 1982). Several teaching methods have been used to increase interactions between handicapped and

nonhandicapped students including peer tutoring programs (Donder & Nieptuski, 1981; Fenrick & Petersen, 1984; Gaylord-Ross & Pitts-Conway, 1984), direct intervention techniques (Haring, Breen, Gaylord-Ross, 1984; Hendrickson, Gable, Hester, & Strain, 1985), special friend projects (Hemphill, 1983; Noonan, Hemphill, & Levy, 1983), and the use of cooperative group structures with heterogeneous groupings of students (Johnson, Johnson, DeWeerdt, Lyons, & Zaidman, 1983; Rynders, Johnson, Johnson, & Schmidt, 1980; Wacker, Berg, & Moore, 1984; Wilcox, Sardellati, & Nevin, 1987).

In peer tutoring projects, nonhandicapped students are taught to provide instruction to their handicapped peers. Positive effects are reflected by the increase in skill acquisition of the handicapped students and an improvement in the skills of the nonhandicapped peer tutor. These programs, by nature, have presented peers as teachers and have not focussed on building friendships with peers.

Direct intervention techniques focus on teaching handicapped children to interact socially with peers.

Adult instructors provide necessary cues, prompts, and reinforcements to the handicapped child during play sessions with nonhandicapped peers. Unfortunately, the direct intervention from adults may serve to focus on the disabilities of the child with handicaps. There is also a possibility that interaction management by the adult could lead to a dependency on the part of the nonhandicapped peer or the adult to facilitate interactions. In addition, direct intervention from an adult instructor may significantly alter the nature of the interaction (Shores, Hester, & Strain, 1976).

Other researchers (Brady, McEvoy, Gunter, Shores, & Fox, 1984; Certo & Kohl, 1984) have stressed that children with severe mental handicaps need naturally occurring social interactions with nonhandicapped peers many times throughout the day in a variety of settings. Naturally occurring reinforcers in a variety of social situations with a number of models may increase the probability that social skills will be generalized. Persons with severe handicaps often demonstrate a lack of ability to successfully generalize across environments, people, and cues without specific

teaching of skills in all environments. The literature on instructional design for persons with severe handicaps emphasizes the need to teach specific skills under a variety of conditions (Sailor & Guess, 1983). The Special Friend Project advocated by Noonan, Hemphill, and Levy (1983) for developing social competence in handicapped students reflects the philosophy that all children need peer relationships. To date, research has shown that nonhandicapped students who participated in the Special Friends Project have demonstrated increased positive attitudes towards their handicapped friends (Voeltz, 1984). As Voeltz's study is a longitudinal research project more information regarding social behavior changes in both handicapped and nonhandicapped children may be reported at a later date.

Research supports the need for opportunities for both structured and spontaneous interactions between nonhandicapped and handicapped children. The common characteristic shared by direct intervention, peer tutoring, and special friends is that students must be in close physical proximity where opportunities for

interactions are encouraged. Schools offer a variety of environments and occasions for encouraging interactions between handicapped and nonhandicapped students in both structured and unstructured settings. Promoting interactions between handicapped and nonhandicapped students within the routine of the school day also provides opportunities for educators to observe the interactions between students. It is important that teachers have a good knowledge of the social behavior of both nonhandicapped and handicapped children so they can develop and implement programs that will increase and improve the interactions between the students.

Interactions that occur. Present research provides a wealth of information on technical methods of teaching social skills to persons with severe handicaps. However, the literature provides little information regarding the social behavior of persons with severe handicaps or even the types of interactions that most commonly occur between children with severe handicaps and nonhandicapped children in school environments. Most of the research regarding

interaction patterns of students with severe handicaps and nonhandicapped students has examined the differences in interaction frequencies between children in integrated and segregated settings.

Brinker (1983), in an extensive study involving 226 students with severe handicaps in integrated and segregated school settings found that children with severe handicaps interacted more frequently with their nonhandicapped peers in integrated groupings than with their handicapped peers in segregated groupings. Based upon these findings Brinker suggested that integrated environments were more conducive to an increased frequency of social interaction for students with severe disabilities.

Guralnick (1980) reached similar conclusions in his study of social interactions among normal preschool children and preschoolers with mild, moderate, and severe handicaps. After recording communicative behavior (giving and receiving toys) in an integrated play session, Guralnick noticed that handicapped preschoolers interacted with greater frequency with their nonhandicapped peers when playing in

heterogeneous groups of children. Both the Brinker (1985) and Guralnick (1980) studies indicated that integrated settings are more conducive to social interactions than are segregated settings. However, little information is given regarding the differences in the social behaviors exhibited by the children in the various settings.

In a more recent study of the effects of group composition on the play behavior of preschool children, Guralnick (1981) noted that children with handicaps who displayed inappropriate behavior showed a decrease in the frequency of inappropriate behavior when they were in play groups with nonhandicapped children. The sample in Guralnick's study was comprised of preschoolers with mild, moderate and severe handicaps and nonhandicapped preschoolers. Decreases in inappropriate behavior have also been demonstrated by Donder and Nietupski (1981). Donder and Nietupski trained 14 nonhandicapped students to teach age-appropriate games to 3 children who were categorized as trainable mentally handicapped. Appropriate behaviors of the handicapped students showed a marked increase

that was maintained up to two weeks after the training finished.

Research into the types of interactions that naturally occur between children with handicaps and nonhandicapped children is sparse. Most of the studies that have focussed on the interactions between handicapped and nonhandicapped people have been conducted with preschool children. The research that has been conducted with school-aged students in integrated settings has predominantly examined the attitudes of the nonhandicapped students towards the handicapped students. There is a definite need for more studies to examine the types of interactions that occur between children with the most severe handicaps and nonhandicapped people of elementary, junior high, and high school age.

Coding Social Interactions

Social interaction literature stems from the field of social psychology. Social interaction is interpreted as body movement as well as verbal language between two or more people (Gahagan, 1975) and is dependent upon both verbal and nonverbal communication.

For research purposes, social interactions are coded according to a variety of dimensions. Most of the coding systems incorporate three general areas: unit type (initiation/response), function or purpose, and form (verbal/physical/gestural) (Harris, 1982).

A variety of categories have been used by researchers to determine the types of interactions between handicapped and nonhandicapped children. The most common system used within the preschool population is based upon the social participation categories developed by Parten (1932). These categories distinguish between group and nongroup participation of children at play. Nongroup participation is coded as unoccupied behavior, onlooker behavior and solitary play. Group participation is coded as parallel activity, associative play, and cooperative play. These categories are described below. Unoccupied behavior refers to a child who is occupying himself or herself by watching other children play, but who is not playing with any particular child or group of children. Onlooker behavior refers to a child who is watching children play, but unlike the child of unoccupied

behavior, this child is directing his or her attention towards a specific group of children to whom he or she will ask questions or give suggestions. Solitary play identifies a child who is intently involved with his or her own play and oblivious to other children even if they are within speaking distance. Parten cautions that the differences between solitary and group play are often based upon an arbitrary distinction where the child engaged in solitary play is playing with toys different from those of the other children, and makes no attempt to interact with the other children.

Parten categorizes group play as parallel activity, associative play, or cooperative play. Parallel play describes a child who plays near other children, uses the same toys, but does not interact with other children. Associative play describes children playing together. Interaction between the players is characterized by borrowing, following, and mild attempts by some children to change the direction of the activity (Parten, 1932). Cooperative play describes the more organized play of children. In

cooperative play, a group leader or leaders emerge. Play is centered around a shared group goal.

Parten's categories were intended to describe the differences in social participation between preschool children. Social participation was described by Parten as the role of the child in the group. Guralnick used Parten's categories in his study of the effects of heterogeneous play groups on play behavior (Guralnick, 1981) and social interactions among nonhandicapped and handicapped preschool children (Guralnick, 1980), for children with a variety of handicapping conditions classified as mild, moderate, and severe.

Other researchers within the special education field, have taken a different approach to categorizing interactions between handicapped and nonhandicapped persons by identifying the purpose of the interaction. Brown, Ford, Nisbet, Sweet, Donnellan, and Gruenewald (1983) defined interactions between nonhandicapped and handicapped children as proximal, helping, service, or reciprocal. The interaction categories identified by Brown, Ford, Nisbet, Sweet, Donnellan, and Gruenewald (1983) focus on the behavior of the nonhandicapped

individual (Brady, McEvoy, Gunter, Shores, & Fox, 1984), are broad, and appear to be dependent upon the environment where the interactions occur.

Proximal interactions identify interactions that occur when handicapped and nonhandicapped individuals share the same environments. Helping interactions occur when a nonhandicapped person voluntarily helps a handicapped person. Service interactions occur when a nonhandicapped person provides a service to a handicapped person, for example, a sales clerk or a crosswalk patrol assists a handicapped person. According to Brown, Ford, Nisbet, Sweet, Donnellan, and Gruenewald (1983) service interactions only occur when the handicapped individual is able to request and/or use the service and when the nonhandicapped individual is able to provide the service. Reciprocal interactions are characterized by a leisure or recreational relationship. For example, these interactions occur when nonhandicapped and handicapped individuals play together, share materials, and information.

Certo and Kohl (1984) argued that too much emphasis has been put on the standard means of interaction (e.g., speaking). People with severe and multiple handicaps often have limited communication and motor skills which frequently restricts interaction. Certo and Kohl (1984) analyzed interactions as either social or task-oriented. Social interactions were considered to be an exchange between two or more individuals for the purpose of obtaining, providing, or receiving assistance, information or feedback, "solely for the purpose of fraternization" (Certo & Kohl, 1984, p. 226). Task-oriented interactions were defined as an exchange between two or more individuals where the intent was to complete an activity (Certo & Kohl, 1984).

Defining interactions as either social or task oriented gives an identified purpose to the interaction and provides a starting point for analyzing the skill to be taught to a student and developing goals for teaching. In order to gain relevant information about interactions between handicapped and nonhandicapped individuals, social and task interactions must be

analyzed further. Certo and Kohl (1984) supported the need for analyzing interactions between handicapped and nonhandicapped individuals because of the importance of identifying skills for instruction. Using their categories, Certo and Kohl (1984) reported that more task than socially oriented interactions occurred between handicapped and nonhandicapped individuals, and that the interactions between nonhandicapped and severely handicapped individuals were characterized by the nonhandicapped individual providing assistance or correctional feedback to the handicapped individual.

Goetz, Haring, and Anderson (1983) designed an assessment of social interactions to be used in integrated settings. Interactions were categorized according to the type, purpose and form of an interaction. Type of interaction was defined as either initiated or acknowledged. Initiated interactions described the person who started the interaction. Acknowledged interactions described who responded to the interaction. The purpose of the interaction was identified as either social, helping or teaching. Goetz, Haring, and Anderson (1983) defined a teaching

interaction as an interaction where a skill was being demonstrated to another person, or the person was being assisted with a skill for the purpose of teaching the skill. A helping interaction was described as an interaction where the recipient of the interaction was being assisted by the initiator of the interaction. A social interaction was loosely defined as not fitting either the teaching or helping category.

Goetz, Haring, and Anderson (1983) included a topographical description of the behavior in their assessment. Behavior was described as being either isolated, inappropriate to others or inappropriate to self. Isolated behavior denoted any behavior that removed the recipient of an initiation from acknowledging the initiation such as deliberate withdrawal from an area by walking away, covering head, turning away, etc. A behavior inappropriate to others included such behavior directed at another person as kicking, spitting, and resisting assistance. A behavior inappropriate to self encompassed the range of self-stimulatory and self-abusive behaviors. The coding system developed by Goetz, Haring, and Anderson

(1983) employs a number of descriptive categories and has undergone several field tests.

Strain, Shores and Kerr (1976) developed a behavior code to categorize interactive behavior between behaviorally disturbed children and their peers. This coding system used two major categories, motor-gestural and verbal-vocal. Motor-gestural included all movements directed towards another person, for example, touching, waving, pointing, or extending arms. Vocal-verbal included all vocalizations directed towards another child. This category included vocalizations made while facing another child and vocalizations presumably directed at another child because of the content ("hey you") or accompanying movements (waving, pointing) (Strain, Shores, & Kerr, 1976). The coding system used by Strain, Shores, and Kerr has been used in several studies specifically with behaviorally disturbed youngsters (Strain, Shores, Kerr, 1976; Strain, Kerr, & Ragland, 1979).

For the purposes of this study, a sample of the categories employed by Strain, Shores, and Kerr (1976) and Goetz, Haring and Anderson (1983) were used because

they provided a systematic means for gathering data on initiations and acknowledgements within dyads, allowed for descriptive information to be coded regarding the type of interaction, and delineated both verbal and nonverbal modes of communication. Within the population of children with severe handicaps, verbal communication is often not the salient means of communication. The categories of verbal-vocal and motor-gestural permit observers to record specific behavior, for example words (hey), sounds (ahh), or movements (waves, pointing, eye gaze, head turning, moving closer to someone).

The present study examined the manner in which children with severe handicaps initiated and responded to interactions with their peers. Describing the observed behavior of the student with severe handicaps allowed for a more accurate analysis of the social behavior demonstrated by the children with severe handicaps and covered a wider range of possible behaviors. In using a combination of the categories developed by Strain, Shores, and Kerr (1976) and Goetz, Haring, and Anderson (1983), the researcher was able

to record words, sounds, and movements identified by the categories of verbal/vocal and motor/gestural and identify inappropriate and isolated behavior. The categories developed by Parten (1932), although well used, emphasized group play behavior rather than individual interactions within the group, an area with which this study was not concerned. The categories developed by Brown, Ford, Nisbet, Sweet, Donnellan, and Gruenewald (1983) and Certo and Kohl (1984) described general types of interactions that occurred in a variety of settings and covered a range of categories not relevant in this study.

Conclusions

Research into the effects of grouping students with severe handicaps with their nonhandicapped peers is in its beginning stages. Some positive effects of integration are already known. Brinker (1985) and Guralnick (1980) have both provided promising results of integration by demonstrating that children with handicaps interact more frequently with peers when the peers are nonhandicapped than when the peers are handicapped. The works of Voeltz (1980, 1982, 1984)

and Noonan, Hemphill, and Levy (1983) have demonstrated that the attitudes of nonhandicapped school-aged students undergo positive changes in direct relationship to the amount of involvement they have with peers who have severe handicaps. In the interests of providing support for integrating students with severe handicaps into the life of the regular school, more research is needed that examines the effects of heterogeneous groupings of students during the school day. With the increasing numbers of students with severe handicaps entering public schools, there is also a need for more research directed at the social behavior of students with severe handicaps in order to provide a framework for developing strategies that will enhance their social integration into the life of the school.

CHAPTER III

Statement of the Problem

There is a critical need for children to interact with their peers during elementary years in order to develop social skills (Appoloni & Cooke, 1975; Hartup, 1978; Hartup, 1980). For children with severe handicaps, interacting with peers often means interacting with children who have similar handicaps. Interactions between handicapped students often do not occur because children with disabilities may have nonfunctional communication systems or maladaptive behaviors that prevent interactions from spontaneously occurring (Certo & Kohl, 1984). However, several studies have shown that children with severe handicaps are capable of learning social skills and improving their social behavior (Donder & Nietupski, 1981; Haring, Breen, & Gaylord-Ross, 1984; Matson, Manikam, Coe, Raymond, Taras, & Long, 1988; Russo & Koegel, 1977; Wacker & Hoffman, 1984).

Schools offer many opportunities for students with handicaps to interact with nonhandicapped students (Stainback, Stainback, & Jaben, 1981); however, the

environment must be structured to encourage nonhandicapped and handicapped students to interact (Stainback, Stainback, Raschke, & Anderson (1981). With the move to educate children with severe handicaps in public schools, more information is required that examines the effects of scheduled contact on the interactions between nonhandicapped and handicapped students in a variety of school environments.

The purpose of this study was to build on past research in the area of interpersonal interactions between persons with severe handicaps and their nonhandicapped peers by providing information regarding both the frequency and type of interactions that occur in homogeneous and heterogeneous groupings of students in school settings. The uniqueness of this study was that the setting was a school recess period in which all children participated in unstructured play. Recess is a time when both handicapped and nonhandicapped children have opportunities to develop friendships, play together, and share a common space. It is also a time when teachers are not required to provide lessons to children. Because recess is common to all children

and all schools, it has many potentially positive features for beginning integration strategies within the life of the school.

This study posed two questions: a) will the frequency of interactions be greater when a child with severe handicaps is paired with a nonhandicapped recess buddy than when the child is paired with another student with severe handicaps, and b) will the manner in which the child with severe handicaps interacts with peers differ when paired with a nonhandicapped recess buddy than when the child participates in recess with another student with severe handicaps. Based upon the findings of Brinker's (1985) study, the answer to the first question is expected to show that the frequency of interactions increase when the child with severe handicaps is paired with a nonhandicapped buddy. An increase in the frequency of interactions in heterogeneous groupings of students is based upon the notion put forth by Brinker (1985) that nonhandicapped peers provide models of appropriate social behavior and constant stimulation for interaction. Children with severe multiple handicaps require repetition of cues

and reinforcement to learn. When children with severe handicaps have opportunities to interact with nondisabled peers, the presentation of social cues is more rapid and consistent than in environments where all peers have poor social skills.

Anticipating an answer to the second question was more difficult because little research exists that describes the manner in which handicapped and nonhandicapped students interact with their peers. The information this study gathered provided a picture of the manner in which students with severe handicaps interact with both nonhandicapped and similarly handicapped peers. Defining how students interact was an exploratory segment of this study. Differences were expected in the use of appropriate and inappropriate modes of communication, where more appropriate communication would occur when the child with severe handicaps was paired with the nonhandicapped recess buddy (Guralnick, 1980).

CHAPTER IV

Method

Introduction

This study was designed to investigate the effects of homogeneous and heterogeneous groupings on the social interactive behavior of four students with severe handicaps.

An alternating treatments design across four subjects was used to determine any difference in the effects of two interventions. Intervention A was a heterogeneous grouping of one nonhandicapped peer and one student with severe handicaps. Intervention B was a homogeneous grouping of two peers with severe handicaps.

Selection of Subjects

Four subjects were selected for this study. The criteria for selecting subjects was: (a) educational placement in a class for children with trainable mental handicaps or dependent handicaps (descriptions of the subjects provide further definition of trainable and dependent handicaps), (b) between the ages of 6 and 11 years, (c) no evidence of severe aggressive

behavior towards others or self-injurious behavior that may have limited the study because of threats to the safety of other children and the need for more intensive supervision by adults, (d) no apparent sensory impairment such as deafness or blindness, (e) attending a school where the students are segregated from their nonhandicapped peers for most of the day, (f) participating in an integrated recess program with nonhandicapped peers, and (g) described by the child's teacher, as presenting some spontaneous interactive behavior, for example, moving towards, reaching towards, looking at, or directing vocalizations towards another person for the purpose of interacting. Students must have been able to attract another person's attention by vocalizing and/or gesturing, for example, waving, directing sounds towards another person, and/or moving closer to someone. In addition, students must have been able to communicate basic wants, for example, to point to an object they desire, move towards an object they desire, and/or take a person to an object they desire. The students could have been either ambulatory or

nonambulatory (in a wheelchair) and must have had some use of their upper bodies for movements such as pointing, waving, or turning their heads. These criteria were chosen to ensure that the handicapped students had the potential to participate socially in an unstructured group recess setting.

To begin the selection procedure, special education teachers of students between 6 and 11 years of age, who attended a segregated school for children with multiple handicaps, were contacted and asked to recommend students they felt met the criteria. Letters of explanation were given to each teacher outlining the study, the role of the teacher, student, and parent. Recommendations were reviewed by the researcher who selected four students who best fit the established criteria and who were closest in age to students from the grade five class.

The researcher then formally contacted parents of each of the four students and discussed the nature and purpose of the study, the data collection procedures, anticipated length of time the student would be involved and aspects of confidentiality. All of the

parents were willing to let their child participate in the study. Consent forms were then sent home for the parents to sign.

Nonhandicapped students attending a regular elementary school that participated in an integrated recess program with the students from the segregated school were approached by the researcher. Students were told that a study was being conducted with the students from the segregated school and that volunteers were needed to play with four students from the segregated school during recess. Students were told of the anticipated length of the study, that they would be video-taped during recess, that they would likely have a new buddy every recess, and that they could withdraw at anytime during the study. Students were told that the researcher was going to watch how they play together. Information about the type of interaction the researcher was looking for was not given to the students in case they attempted to prompt the child with severe handicaps. No explanation was given regarding the frequency of interaction to be observed in case students increased the number of

interactions initiated with the child with severe handicaps. Knowledge of these areas of data collection prior to the study could have biased the outcome of the study.

Letters explaining the study were then sent home with all students in the grade five class who were interested in participating. Students were told that they had to have parent consent before they could participate. Twenty-nine consent forms were sent home and twenty-six forms were returned, signed by the parents.

Letters explaining the study were sent home to the parents of eight students with severe mental handicaps who attended the segregated school. The letters requested permission for the students to participate as buddies for the four subjects. Eight letters were sent home and six were returned signed by the parents.

Subjects. Four subjects with severe handicaps participated in this study. Three of the subjects were girls and one was a boy. All four subjects attended a segregated school for children who have a severe mental handicap, and all four subjects participated in a

fifteen minute recess with nonhandicapped students, four mornings per week. To maintain confidentiality, the children will be referred to by fictitious names: Tony, Nan, Tina, and Karen.

Subject 1, Tony, was an 11 year old boy with severe cognitive delays and physical disabilities. Tony used a manual wheelchair. He had functional movement in his upper body and so was able to wheel himself and perform a variety of tasks that required fine motor skills. Tony communicated with speech and a variety of gestures. He used a combination of two and three word phrases, for example, "go to school" to mean that he came to school in the morning. He could recall some events from memory and talk about them. He understood simple two step directions, and providing he was motivated, Tony was capable of responding to a variety of directions (e.g., "Get the glass.", "Go to the classroom.") and questions (e.g., "Where is the book?", "What are you doing?"). He was described by his teachers as very social when motivated. Tony spontaneously initiated contact with class peers and adults with whom he was familiar. He did not

frequently speak in new situations and rarely responded to questions from strangers.

Subject 2, Nan, a 10 year old girl with severe disabilities was ambulatory and demonstrated good motor skills. Nan communicated with a few words (e.g., "hi," "bye," "pee"). She also used a variety of basic gestures (e.g., pointing, nodding, and stamping feet). She responded to simple directions (e.g., "Come here," "Look," "Stand up," etc.) and some questions (e.g., "What are you doing?", "Where is your coat?"). Nan's teacher described her as being very dependent on others to assist her. Nan was also described as a very social child, one who approached other children, chose to sit next to peers, and responded to initiations from peers. Nan engaged in a few inappropriate social behaviors like pushing other children, stamping her feet while shaking her head back and forth, and uttering a series of babbled speech.

Subject 3, Tina, was a 10 year old girl with severe disabilities. Tina communicated by subtle gestures (e.g., smiles, standing beside something she wanted) and several non-specific vocalizations. Tina

followed simple one step directions (e.g., "Sit.", "Stand.") although she often required physical prompts to comply with more complex requests (e.g., "Come here.", "Pick up the pen."). Tina demonstrated some stereotypic behaviors, mainly rocking, humming, flicking her hands to the side of her head. Tina would hit her ears when she became frustrated or if she did not want to do something she was being requested to do. Although Tina had no difficulty walking, she preferred to sit on the ground. Tina did not like to pick up or hold objects although she demonstrated the fine motor grasp to accomplish the tasks. Tina did not often initiate interactions with her classmates.

Subject 4, Karen, was a 9 year old girl with severe disabilities. Karen demonstrated good movement skills: she walked, climbed stairs, kicked and threw balls, and performed many fine motor tasks. Karen engaged in stereotypic behaviors such as tapping the palm of one hand with the fingertips of the other hand, constantly repeating the syllable "eee," and running while waving her hands at her sides. Karen used photographs of common objects to request things she

wanted, and a few signs (e.g., eat). Karen had demonstrated some spontaneous interactions with peers (e.g., approaching, sitting near, waving "hi").

Volunteers

Thirty-one children volunteered to be buddies for the four subjects in the study. Twenty-six of the volunteers were nonhandicapped grade fives ranging in ages from 10 to 11 years. Thirteen of the volunteers without handicaps were girls and thirteen were boys. The remaining six volunteers were students with severe handicaps, ranging in age from 6 to 11 years, who attended the segregated school. Five of the volunteers were girls and one was a boy.

Volunteers were randomly selected, using a table of random numbers, to participate as partners for the four subjects in the study. Six of the selected nonhandicapped volunteers were girls and seven were boys. Three of the nonhandicapped boy volunteers were selected twice. All six of the volunteers with handicaps were selected; one girl was selected 4 times, two girls were selected 3 times, two girls were selected twice, and the boy was selected twice.

Setting and Materials

The study was conducted in the gymnasium of a segregated school. Four pairs of children (eight children in total) and one supervising staff person were present in the gym during all sessions. Before each recess time, the researcher set up the gym with a variety of materials (see Appendix 1 for a list of all toys). All materials were present for the eight video-taped sessions with the exception of a puppet and a toy car that were favoured toys of two of the subjects. The puppet was brought into the gym by subject 4 on day two and the toy car was requested by subject 1 on day three. Two cameras were used to collect the data. Both cameras were placed on the stage at one end of the gym. One camera was to the left of centre stage and the other camera was to the right of centre stage. The same two people operated the cameras for all eight sessions.

Experimental Design

The experimental design chosen for this study was an alternating treatments design across interventions (Barlow & Hayes, 1979). The alternating treatments

design was an ideal design for this study because it allowed for a rapid alternation of two treatment interventions. The rapid alternation of conditions permitted the researcher to compare two interventions in a short period of time (eight sessions). The effectiveness of the intervention was determined by the magnitude of difference between the effects of each intervention on the target behavior (Gast, Thomas, & Tawney, 1984).

The alternating treatments design, known for its strong internal validity, requires precise counterbalancing of potentially interfering variables (for example, location, time, people, sequencing of interventions). Before beginning the experiment all variables must be identified and a schedule for counterbalancing developed. Interventions are then randomly presented either within each experimental session or across days. Each intervention is presented an equal number of times during the experiment.

There are several advantages to the alternating treatments design. First, a baseline condition is an optional requirement (Gast, Thomas, & Tawney, 1984),

meaning that treatment conditions can be implemented immediately without the need to wait for a stable baseline. Applied research often is concerned with low rates of behavior that can be unstable (Barlow & Hayes, 1979). The alternating treatments design is ideal where behaviors that occur infrequently are concerned because time is not spent waiting for the behavior to stabilize. Treatments can be begun immediately.

Another important advantage of the alternating treatments design is the lack of need for a withdrawal phase (Gast, Thomas, & Tawney, 1984). Differences can be determined by comparing the distance between the level of the data points for each intervention. Ethical concerns regarding withdrawal conditions do not have to be addressed because both interventions can be employed over a short period of time to determine the most effective treatment.

Threats to internal validity are accounted for through rapid random alternation of treatments, while counterbalancing treatments, settings, and/or people controls for the effects of sequencing (Barlow & Hayes, 1979). Precise attention to counterbalancing

potentially interfering variables establishes strong internal validity outcomes (Barlow & Hayes, 1979).

Differences in intervention effects are often evident early in the study with the alternating treatments design (Gast, Thomas, & Tawney, 1984) so that early termination is not critical to the results of the study (Barlow & Hayes, 1979). Applied research is susceptible to early termination because the researcher is trying to create consistent conditions in an environment that could have many interfering variables. The alternating treatments design is ideal for applied research because it offers a quick method of comparing two or more interventions.

Although the alternating treatments design is an excellent option for field research, it has some limitations that preclude its use by many researchers. For example, consistency in presentation of conditions is necessary (Gast, Thomas, & Tawney, 1984) to limit any effects caused by differences in instructors. Rigorous training of all teachers/instructors must be accomplished to ensure that each person is conducting the treatment condition(s) as consistently as possible.

Presenting two or more conditions in rapid alternation does not reflect the schedule of any typical program and therefore is artificial in natural settings (Gast, Thomas, & Tawney, 1984). Rarely are interventions rapidly alternated across people, settings, or behaviors.

Within the natural environment the task of controlling all extraneous variables can be a challenge. Although the alternating treatments design is effective in establishing comparisons between intervention techniques, it is only reliable if all variables are counterbalanced across interventions. Controlling for the influence of conflicting variables can be an overwhelming task (Barlow & Hayes, 1979).

Treatment effects should be seen early when using an alternating treatments design. However, some behaviors may be adversely affected by the rapid alternation of interventions. Barlow and Hayes (1979) discussed carry-over effects as contrast and induction. Contrast effects can occur when a behavior changes in a direction opposite to what was expected. Induction effects can occur when a behavior changes during one

treatment to more closely approximate the behavior in the other treatment. Although Barlow and Hayes (1979) acknowledged that carry-over effects threaten the validity of alternating treatment designs, they argued that precise counterbalancing of the presentation order of treatment techniques could "minimize or even eliminate contrast and induction" (Barlow & Hayes, 1979, p. 205).

The alternating treatments design is intended to be a quick method of comparing interventions. Experimental control is achieved when there is an immediate significant difference between the effects of the interventions on the behavior. However, in the event that an intervention is effective but weak, data may not reflect any effect (Gast, Thomas, & Tawney, 1984). In this case, the intervention may only be effective if applied over a long period of time so any effectiveness would be undetected in the short term.

In this study two conditions were compared across four subjects. A baseline phase was not used. Condition A was pairing a student with severe handicaps with a randomly selected nonhandicapped elementary

student. Condition B involved pairing a student with severe handicaps with another randomly selected student with severe handicaps. To maximize validity of the results a table of random numbers was used to assign interventions across eight recess sessions for each subject. Within each recess session, four other variables were randomly assigned to each of the four students: a) partners, b) supervising staff person, c) the camera used to video-tape the student because there were two cameras, and (d) the order in which the subject was video-taped during each session. The schedule of counterbalancing for each variable was completed prior to the beginning of the project. In order to minimize the effect of instructors, the researcher gave all instructions to the students and the supervising staff person.

Definitions of Variables

Dependent variables. There were two dependent variables, frequency of interaction and type of interaction. Frequency of interaction was measured by the number of initiations acknowledged by the student with severe handicaps and the paired recess partner.

An initiation was said to occur when one student was within a range of 1 meter from another student, oriented his or her body towards the student and made a vocal or gestural movement to indicate purposeful communication (Gaylord-Ross, Haring, Breen, & Pitts-Conway; 1984, Strain, Shores, & Kerr, 1976). A gestural response included all movements that caused a student's head, arms, or feet to come into direct contact with the body of another child; that involved waving or extending arms towards another child; or that involved placing hands on a toy, object, or apparatus that was being touched or manipulated by the other student (Strain, Shores, & Kerr, 1976). A vocal-verbal response included all vocalizations uttered while the student was within 1 meter of and facing the other student, or that were directed at the student as evident from the content of the utterance or the accompanying movements (Strain, Shores, & Kerr, 1976).

An acknowledgement occurred when a student made a movement, gesture, or vocalization directly in response to an initiation from another student. Acknowledgements had to be made within 10 seconds of the initiation, and

were clearly understood to be acknowledgements because of content or accompanying movements. Acknowledgement behaviors included verbal and gestural responses, changes in head and/or body orientation, handling objects, or making eye contact with the initiator (Gaylord-Ross, Haring, Breen, & Pitts-Conway, 1984).

Inappropriate behavior occurred when a student emitted a behavior towards another student that was injurious to that student, injurious to oneself, or resistive (Goetz, Haring, & Anderson, 1983). Inappropriate behaviors injurious to another student, were, for example, kicking, hitting, spitting, pinching, pulling hair, pulling clothing, pulling person, grabbing, head butting, or scratching. Inappropriate behaviors injurious to oneself were, for example, slapping face, biting self, hitting own head with hands, hitting own head against objects, pulling at own body, scratching self, and spitting on self. Inappropriate behavior also included any behavior that was resistive, for example, becoming passively floppy to resist involvement in an activity.

Types of interactions were analyzed according to movements (e.g., wave, point, eye contact, move physically closer to) and vocalizations. Recording the type of movements and vocalizations provided a description of the methods students with severe handicaps and their partners used to get each other's attention and to respond to social initiations. Measurement of the dependent variables provided valuable information concerning the social behavior of the handicapped children.

Independent Variable. The independent variable for this study was the pairing of the student with severe handicaps with a recess buddy who was either nonhandicapped or severely handicapped. Pairing was conducted randomly across subjects over recess periods. That is, each subject was randomly paired with a buddy for each recess period. Students were paired at the beginning of the recess period.

Procedure

Prior to the start of the study, the researcher used a table of random numbers to counterbalance conditions, staff supervisors, the sequence of taping

subjects, and the camera to be used across all subjects. An example of the randomly determined schedule for presentation of conditions is illustrated in Table 1.

First, experimental conditions were counterbalanced across the eight data collection days. Second, the staff supervisor of recess was chosen randomly for each of the data collection days. Third, the camera (first or second) to be used for the taping was randomly selected for each subject. Fourth, the order of the taping for the four students was randomly selected. Recess buddies were randomly selected each morning, prior to the recess period.

The recess period took place from 10:30 a.m. until 10:45 a.m. Monday, Wednesday, Thursday, and Friday. Swimming lessons for the four subjects was scheduled on Tuesdays. All students from the regular elementary school who were randomly selected as partners for that day reported to the gym where they were paired with their buddy. All students from the segregated school who were randomly selected as partners for that day as well as the subjects of the study were taken to the gym

Table 1

Schedule of random presentation of conditions for recess for 4 subjects.

Session	Subjects			
	1	2	3	4
1.	H-H	H-NH	H-NH	H-H
2.	H-H	H-NH	H-NH	H-NH
3.	H-NH	H-H	H-NH	H-H
4.	H-NH	H-NH	H-H	H-NH
5.	H-H	H-H	H-H	H-NH
6.	H-NH	H-H	H-H	H-H
7.	H-NH	H-NH	H-H	H-H
8.	H-H	H-H	H-NH	H-NH

Note. H-NH denotes condition A, pairing handicapped with nonhandicapped child and H-H denotes condition B, pairing handicapped with handicapped child.

by the school staff. In the gym the children were paired with their buddies and given the instruction "play with your partner."

Video-taping began after all the children had been in the gym for five minutes. At the beginning of the second five minutes of the recess, two randomly selected pairs of students were video-taped, one pair by each camera. During the final five minutes of the recess period, the other two pairs of children were video-taped, one pair by each camera. The camera operators began and ended taping together.

Data Collection. Direct observational continuous recording from video tapes of the number of initiations and acknowledgments between the target student and other students were recorded. Refer to the section on definition of variables for the operational definitions of an initiation and acknowledgement. Social turns were also recorded. A social turn was considered to be an expansion or elaboration of an initiation-acknowledgement interaction where the initiator continued the interaction by taking another turn.

If the initiation or acknowledgement had been executed inappropriately, inappropriate behavior was recorded. Inappropriate behavior occurred when an initiation or response was characterized by a behavior considered to be injurious to that person, for example, kicking, hitting, spitting, pinching, pulling hair, or pulling clothing.

Direct observational recording describing the manner in which the initiation and response (verbal/vocal, motor/gestural) between the target student and other students was executed was also recorded. Further analysis within these categories was recorded by descriptors (pointing, eye gaze, moved closer, or wave).

The tapes were viewed in the order in which they were recorded. During the first viewing, the researcher recorded each initiation and acknowledgment between the subject and the partner, the direction of the initiation and acknowledgement, any initiations between the subject and any other person in the gym, and any acknowledgements between the subject and any other person in the gym. The researcher also recorded

nonacknowledgments to an initiation. The researcher recorded how the initiation or acknowledgement was given, for example, vocally, physically, visually, or a combination of vocal, physical, and visual, and whether the behavior was inappropriate. When an initiation/acknowledgment sequence was expanded into a social chain, data was taken on the number of turns taken by each person within the chain. Tapes were started and stopped to ensure that information was accurately recorded.

During the second viewing of the tapes, the researcher recorded the number of minutes the subject was interacting with his/her partner. Duration of the interaction was measured by beginning the stop watch as the initiation was executed and stopping the stop watch as soon as one of the interacting persons shifted attention away from the other interacting person, or one person moved out of range (1.5 meters) from the other interacting person (Gaylord-Ross, Haring, Breen, & Pitts-Conway, 1984).

Reliability. To establish reliability for the dependent variable measure, a second and third observer

recorded the number of initiations, acknowledgements, and social turns between the subject and matched peer.

The observers were trained by the researcher. Training consisted of explaining the method of data collection, discussing the definitions of the variables, and practicing on two trial tapes taken prior to the beginning of the study. Scores from the training session were 80% between the three observers.

The two observers observed two randomly selected sessions for each subject. Inter-rater reliability was calculated by dividing the number of agreements by the total number of initiations, acknowledgements, and turns that occurred, and multiplying by 100. Inter-rater reliability was 62.5% for subject 1, 75% for subject 2, 100% for subject 3 and 100% for subject 4. Differences occurred when recording social turns.

Data Analysis. Frequency of interaction was analyzed as the number of initiations acknowledged by the partners in the pair. An interaction was defined as having two-parts, an initiation and an acknowledgement (Gaylord-Ross, Haring, Breen, & Pitts-Conway, 1984). Data on the initiation and

acknowledgement behavior of each of the four subjects and their partners was coded as percentage of initiations acknowledged. Frequency of interaction was defined by the percentage of initiations acknowledged. The higher the percentage of initiations that were acknowledged between partners, the greater the frequency of interaction between partners.

Type of interaction was coded as motor/gestural, verbal/vocal, and visual behaviors. Initiations, acknowledgements, and nonacknowledgements were observed to determine the type of behavior that was predominant. For analytic purposes, recordings were made of the number of initiations and acknowledgements, as well as the number of motor/gestural, verbal/vocal, and visual responses, and a combination of these responses. In addition, any inappropriate responses were counted. Scores in each category were totalled and divided by the total number of initiations and acknowledgements emitted by the subject during the session. This score was multiplied by 100 to get a percentage of total initiations and acknowledgements that were executed in a specific manner (e.g., vocally) by each subject.

Duration of interaction was measured in minutes and seconds. The total time during each five minute session that the subject was interacting with his buddy was recorded. The mean duration of interaction was calculated for each grouping.

The number of social turns taken by each partner was recorded across all sessions. Raw frequency was used to represent the numbers of social turns taken by each partner in the heterogeneous and homogeneous dyad.

As the tapes were being viewed, it became evident to the researcher that staff initiated interactions with the subjects, even though the staff had been instructed to intervene only for safety reasons. Interactions with staff were totalled for each session for all subjects. The total number of interactions with staff were divided by the total number of interactions the subject had during each five minute session. This number was multiplied by 100 to get a percentage of the subject's total interactions that occurred with staff.

CHAPTER V

Results

This study was designed to examine the difference in interactions between children with severe handicaps and similarly handicapped peers, and between children with severe handicaps and nondisabled peers.

Two questions were posed at the beginning of the study: a) would there be more interactions between students with severe handicaps and their nondisabled peers than between students with severe handicaps and their similarly handicapped peers, and b) would the behaviors of students with severe handicaps differ when they were paired with nondisabled peers from when they were paired with similarly handicapped peers.

The results of this study are discussed in five sections. The first section presents the overall findings of the difference in the frequency of interactions between the two conditions. The second section presents the findings of the differences in the methods of initiating and responding to peers. Differences in duration of interactions are reported in the third section. Social turn-taking patterns are

reported in the fourth section, and the interactions with the supervising staff person are reported in the last section. A brief report on each subject concludes the chapter.

Social Interactions between Peers

Social interactions between peers were recorded by observing the frequency of interaction between partners in both heterogeneous and homogeneous groups. Frequency of interaction was measured by recording the number of acknowledged initiations in each dyad. The total number of initiations acknowledged were divided by the number of initiations and multiplied by 100 to get a percentage. The percentage of interactions per session were plotted on a graph. The Tawney and Gast (1984) method for visually analyzing data within conditions and between adjacent conditions was used to visually analyze the data.

Visual analysis of graphed data has been used extensively by educators using applied behavioral analysis techniques (Tawney & Gast, 1984). Practicality and reliability were among the many advantages cited by Tawney and Gast (1984) for using a

visual analysis of graphed data. Visually analyzing graphed data can be done with data from individuals or small groups, and it encourages the continuous evaluation of data as it is collected which allows for data-based decisions, it promotes individualization of results because of its focus on individual data patterns, and it allows researchers to discover findings or trends not necessarily outlined in specific research (Tawney and Gast, 1984).

To ensure reliability in the visual analysis of graphed data, researchers must follow guidelines. Tawney and Gast (1984) stated that the following properties of data were important in the visual analysis of graphed data: a) the number of data points within a condition, b) the number of variables changed between conditions, c) the changes in level stability between and within conditions, and d) the changes in trend direction and stability within and between conditions. The Tawney and Gast (1984) steps for visually analyzing graphed data adhere to these generally accepted properties of data that need attention.

The steps used to analyze data within conditions are outlined below. Table 2 (page 75) presents the summary of the analyzed data within conditions for subject 1.

1. Condition length. Each condition was presented four times to each subject.

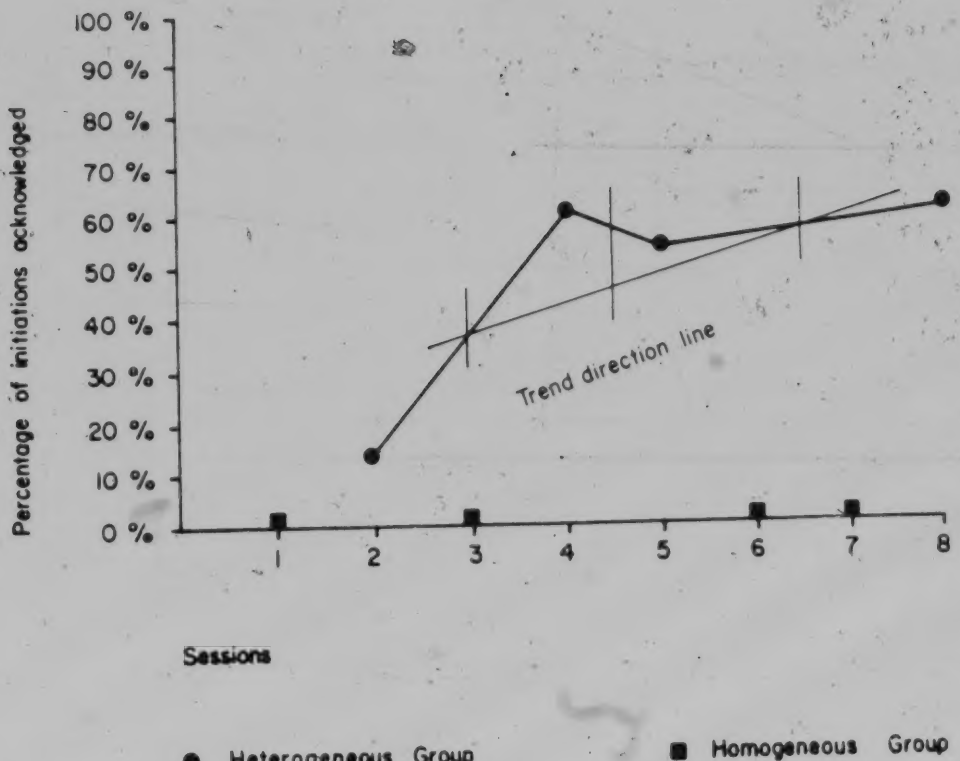
2. Estimate of trend direction. Trend direction refers to the steepness of the data path (Tawney & Gast 1984). The split-middle method (Tawney & Gast, 1984) was used to determine the direction of the trend. An example of the split-middle procedure is given in Figure 1 (page 76). Figure 1 (page 76) is the summarized graphed data for the percentage of initiations acknowledged for subject 4. Two data paths are shown in Figure 1 (page 76); one data path for heterogeneous groups and one data path for homogeneous groups. To estimate the direction of the data path for heterogeneous groups, the data path in Figure 1 (page 76) was divided into two equal parts, half-way between the second and third data points. Each half was again divided in half by finding the mid-way point between the data points and the middle value for each data

Table 2

Within condition analysis of subject 1's responses under two conditions.

Steps	Conditions	
	Heterogeneous	Homogeneous
1. Condition Length	4	4
2. Estimate of Trend Direction	——— (=)	\ (-)
3. Trend Stability	stable (100%)	variable (0%)
4. Data Paths Within Trend	——— (=)	^ (+) (-)
5. Level Stability and Range	stable (100-100)	variable (1-100)
6. Level Change	(100-100) 0	(0-0) 0

Figure 1. Estimation of trend direction for subject 4.



series. Tawney and Gast (1984) referred to this as the quarter-intersect line. A line was then drawn that passed through the quarter-intersect lines. The estimate of the trend direction was then recorded using the Tawney and Gast (1984) legend as improving (+), decaying (-), or zero celeration (=). The split-middle procedure for estimating trend direction was repeated for the data path for homogeneous groups for subject 1 and for all data paths for subjects 2, 3, and 4. The results for subject one are reported in Table 2 (page 75).

The results for subject 1 shown in Table 2 (page 75), indicate a zero celeration trend line in the heterogeneous group and a decaying celeration trend line in the homogeneous group. There was no improvement in the percentage of social initiations acknowledged during play with nonhandicapped peers. There was a decrease in the percentage of acknowledged initiations during play with handicapped peers.

Subject two had an improving trend direction in the heterogeneous group denoting that a greater percentage of initiations were acknowledged over the

course of the four sessions. During the homogeneous group, subject two had a decaying trend direction, indicating that the percentage of social initiations acknowledged declined over the course of the four sessions.

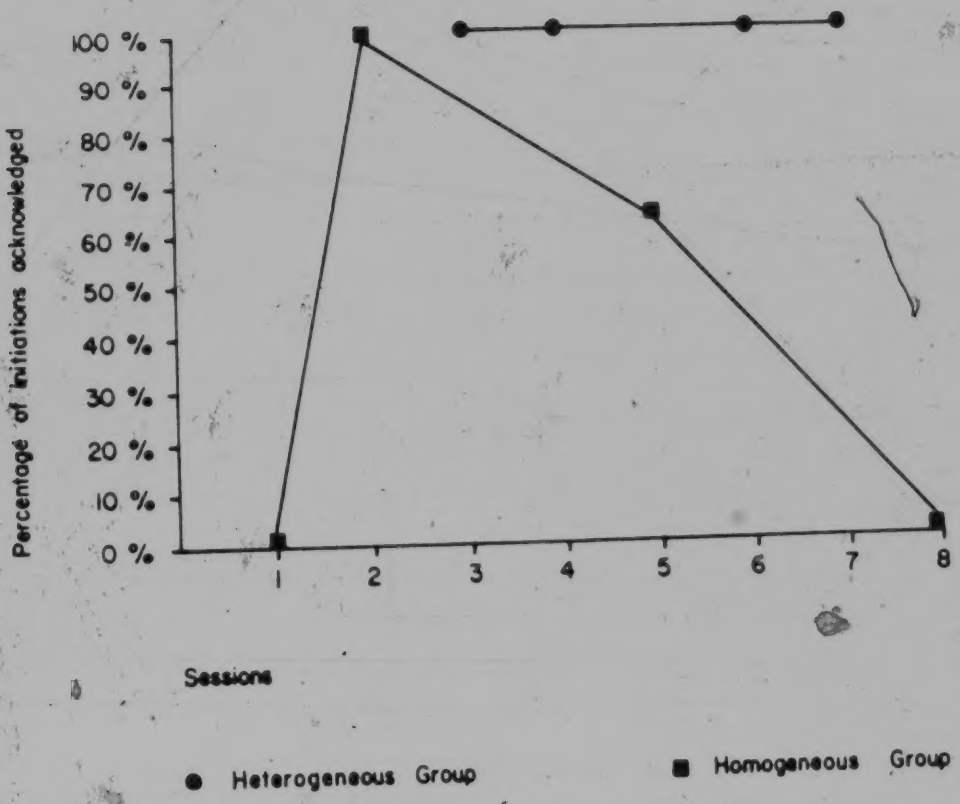
Both subject three and subject four had an improving trend line during heterogeneous groupings and a zero celeration trend line during homogeneous groupings. There was an increase in the percentage of social initiations acknowledged between both subjects and their nonhandicapped peers over the course of the four sessions. There was no change in the percentage of acknowledged initiations between the subjects and their handicapped peers over the four sessions.

3. Determine stability of trend. Stability of trend is the third property of data that Tawney and Gast recommended should be evaluated (see Table 2, page 75). The highest data point value and a 15% stability criterion recommended by Tawney and Gast (1984) was used to determine the stability of the data. In each condition, the highest data point value was multiplied by the stability criterion (e.g., 100 x .15) to

determine the acceptable stability range. If 80% - 90% of the data points fell between the range (a criterion recommended by Tawney and Gast, 1984), the trend was considered stable. If all the data points fell between the stability range then it was identified as 100% stable. If no data points fell between the stability range, then it was identified as variable with 0 stability.

As reported in Table 2 (page 75), data for subject 1 in the heterogeneous group was stable with 100% of the data points falling within the acceptable trend stability range. In the heterogeneous groups, the percentage of social initiations acknowledged between subject 1 and nonhandicapped partners was consistent across all four sessions. However, data for subject 1 in homogeneous groups was variable with no data points falling within the acceptable stability range. Table 2 (page 75) reports the trend of the data path as variable with 0 stability. The graphed data for the percentage of initiations acknowledged by subject 1 and partners in heterogeneous and homogeneous groups is presented in Figure 2 (page 80). Figure 2 (page 80)

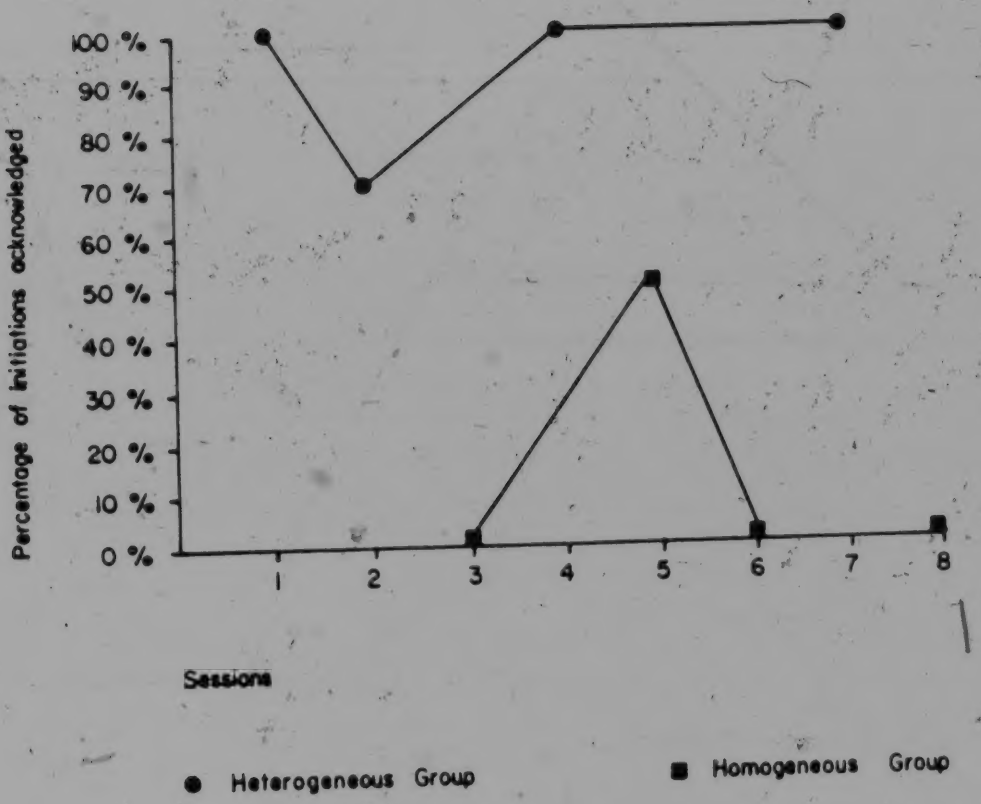
Figure 2. Percentage of initiations acknowledged by subject 1 and partners in heterogeneous and homogeneous groups



shows the variable data path for homogeneous groups for subject 1. The variability is apparent at the second session data point that deviated more from the pattern of the first and last points than the third data point. The second session data point indicates that 100% of the initiations between buddies were acknowledged during session two. In fact, during the recess period, the similarly handicapped buddy acknowledged one initiation from subject 1. Subject 1 only initiated one interaction and the handicapped partner did not initiate any interactions, meaning that all the initiations were acknowledged, even though there was only one initiation.

Figure 3 (page 82) presents the graphed data of the percentage of initiations acknowledged by subject 2 and partners in homogeneous and heterogeneous groups. Figure 3 (page 82) shows that the data for subject 2 was variable in both the heterogeneous and homogeneous groups. The percentage of initiations acknowledged between subject 2 and nonhandicapped and handicapped partners was not consistent across the four sessions in either heterogeneous or homogeneous groups. The

Figure 3. Percentage of initiations acknowledged by subject 2 and partners in heterogeneous and homogeneous groups.



variability in data for heterogeneous groups was not as great as the variability in data for the homogeneous groups. Three of the four data points from the heterogeneous groups fell within the acceptable range for trend variability suggested by Tawney & Gast (1984) whereas only half of the data points from the homogeneous groups fell within the acceptable range for trend variability.

Estimation of the trend lines and trend stability for subjects 3 and 4 indicated that data for the heterogeneous groups was variable and data for the homogeneous groups was stable. Figure 4 (page 84) presents the graphed data of the percentage of initiations acknowledged by subject 3 and partners in heterogeneous and homogeneous groups. Figure 4 (page 84) shows the variable data path for percentage of initiations acknowledged in heterogeneous groups by subject 3 and partners, where one data point fell within the acceptable range of trend stability. Figure 5 (page 85) presents the graphed data of the percentage of initiations acknowledged by subject 4 and partners in heterogeneous and homogeneous groups.

Figure 4. Percentage of initiations acknowledged by subject 3 and partners in heterogeneous and homogeneous groups.

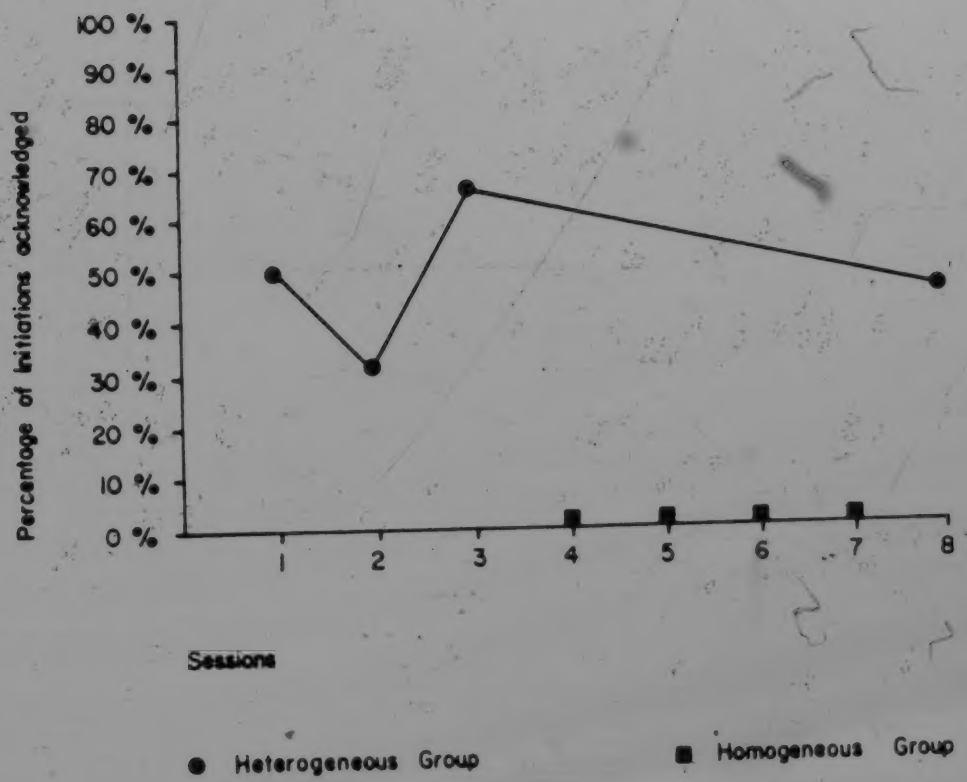


Figure 5. Percentage of initiations acknowledged by subject 4 and partners in heterogeneous and homogeneous groups.

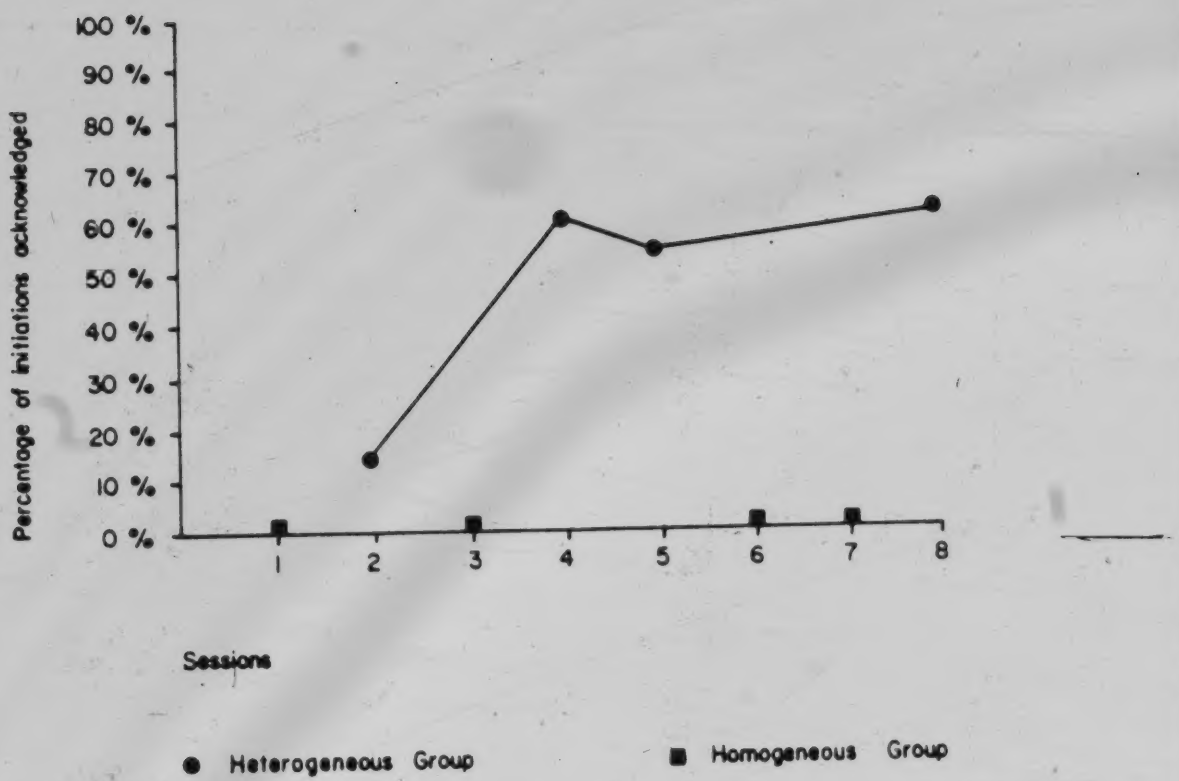


Figure 5 (page 85) shows the variable data path for heterogeneous groups for subject 4.

4. Data paths within trend. Establishing all the data paths within the trend line is the fourth property of data that Tawney and Gast recommended should be evaluated (see Table 2, page 75). Each condition was examined for more than one data path within the trend line. Establishing whether there was more than one data path within the trend line was accomplished by visually inspecting the data and drawing a line that bisected the data points. Tawney and Gast (1984) referred to this as the free-hand method. When two distinct data paths were found, they were depicted in Table 2 (page 75) as follows: a) improving (+), (b) decaying (-), or (c) no change (=).

Table 2 (page 75) shows the results for subject 1. Subject 1 had only one data path within the trend line for the data in heterogeneous groups, therefore, no further analysis was necessary. In the homogeneous group, subject 1 did have two data paths, one improving, and one decaying. Tawney and Gast (1984) suggested that when two data paths occurred, the last

data path within the trend should guide decisions. Although there was initial improvement in the percentage of acknowledged initiations between similarly handicapped peers, an abrupt decrease followed. Figure 2 (page 80) shows that in the first session 0 initiations were acknowledged, followed by an increase to 100% of initiations acknowledged in session two and a decrease to 62.5% of initiations acknowledged in session three and 0 initiations acknowledged in the final session. The last data path in the homogeneous group for subject 1 was the decaying data path, indicating a decrease in the percentage of initiations acknowledged between subject 1 and the partners.

Subject 2 also had two data paths in both conditions. The data path for the heterogeneous group shown in Figure 3 (page 82) reveals that data initially decayed, then immediately improved and stabilized, whereas the data path for the homogeneous group initially improved, then decayed. The percentage of initiations acknowledged between subject 2 and nonhandicapped peers began with 100% of the initiations acknowledged, decreased to 70.8%, then recovered to

100% of initiations acknowledged for the final two sessions. The percentage of initiations acknowledged between subject 2 and handicapped partners initially increased between the first and second session from 0 to 50%. By the fourth session the percentage of initiations acknowledged between subject 2 and handicapped partners had stabilized at 0.

Data for subject 3 shown in Figure 4 (page 84) indicates one data path for heterogeneous and homogeneous groups. A decreasing data path for heterogeneous groups indicated that the percentage of initiations acknowledged decreased across four sessions. However, a closer examination showed that although the trend lines showed a general decrease, there was an increase in the percentage of initiations acknowledged by the partners between the second and third sessions, indicating that the trend of the data path could be in a decreasing/increasing pattern.

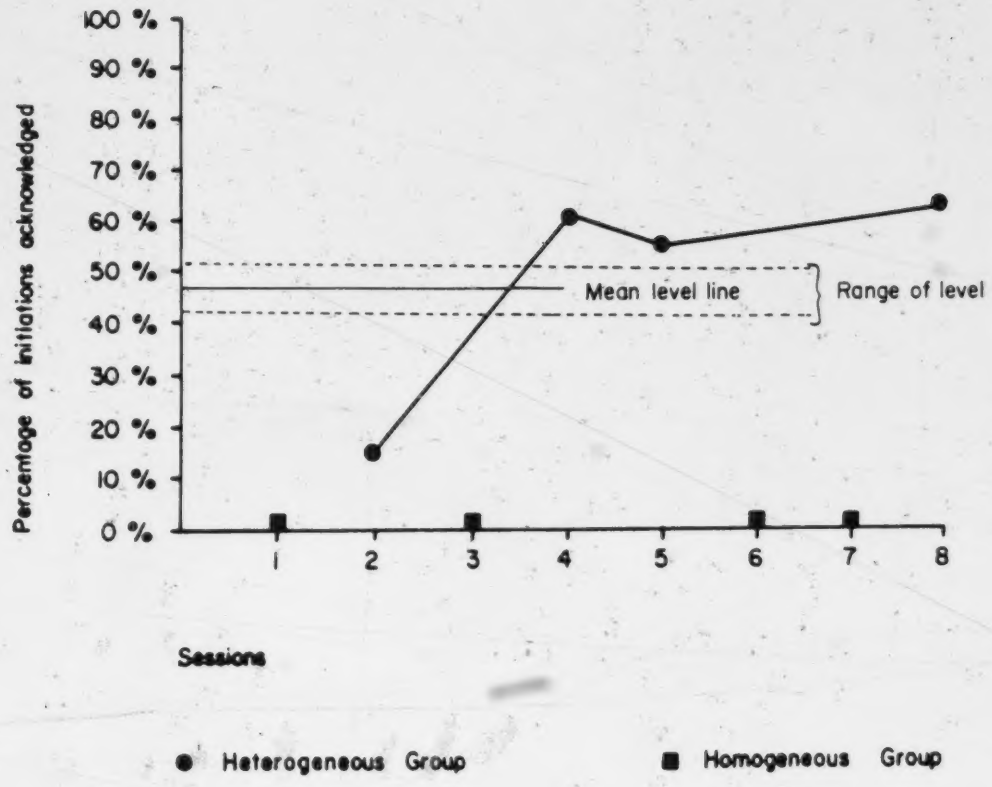
Data paths for the homogeneous groups for subject 3 also shown in Figure 4 (page 84), indicated no change across all sessions. There were no initiations

acknowledged between subject 3 and handicapped partners in homogeneous groups.

Figure 5 (page 85) shows the data paths for both heterogeneous and homogeneous groups for subject four. Only one data path was found within each of the trend lines therefore, no further analysis was done.

5. Level stability and range. The range of data points around the mean level line was the fifth property of data Tawney and Gast recommended be evaluated (see Table 2, page 75). Level stability refers to the magnitude of the range of data points. Level stability is determined by finding the range of data around the mean level line. An example of the mean level line and the stability criterion range for the percentage of initiations acknowledged for subject 4 is depicted in Figure 6 (page 90). The mean level line was calculated for the heterogeneous condition by adding the value of the data points and dividing the sum by the number of data points (4). The mean level line was then drawn horizontally on the graph in Figure 6 (page 90). The range of level stability was then calculated by using a 15% stability criterion suggested

Figure 6. Mean level line and range of level stability subject 4.



by Tawney and Gast (1984). In Figure 6 (page 90), the range of level stability is marked by a dotted line 4.3 percentage points above the mean level line at 52% and 4.3 percentage points below the mean level line at 43.4%. If 80% - 90% of the data points fell within the range of level stability, the level was reported as stable. If fewer than 80% of the data points fell within the range, the level was reported as variable. The range of data was determined by locating the lowest and the highest data point along the data path for the heterogeneous group. Figure 6 (page 90) shows the lowest data point as 14.2% and the highest as 61.9%.

Table 2 (page 75) reports the results of the stability of data around the mean level line for subject 1. In heterogeneous groups, the data path for subject 1 was stable, with no range in data between the highest and lowest data point (100-100). All data points indicated that 100% of the initiations between the partners were acknowledged. In homogeneous groups the range in data extended from 0 - 100, indicating that as few as 0 initiations to as many as 100% of

initiations between partners were acknowledged. The large range indicates a variable range of data.

Figure 3 (page 82) shows that subject 2 had a variable range of data in both the heterogeneous and homogeneous groups. In the heterogeneous groups, data ranged from 70.8% to 100% of initiations acknowledged. In homogeneous groups, the range was from 0 to 50% of the initiations acknowledged.

Both subject 3 (Figure 4, page 84) and subject 4 (Figure 5, page 85) had a variable range of data in heterogeneous groups and a stable level of data in homogeneous groups. Figure 4 (page 84) shows that in heterogeneous groups, the percentage of initiations acknowledged between subject 3 and nonhandicapped partners ranged from 31% to 66.6%. Figure 5 (page 85) indicates that for subject 4, the percentage of acknowledged initiations in heterogeneous groups ranged from 14.2% to 61.9%. In homogeneous groups, the percentage of initiations acknowledged between both subject 3 and subject 4 and handicapped peers was consistently stable at 0.

6. Level change. Determining the change in the level of data is the sixth property of data that Tawney and Gast recommended should be evaluated (see Table 2, page 75). The amount of change in the level of the data path between the first and last session was examined by finding the absolute level change. Absolute level change was calculated by subtracting the value of the data point on the last day (day 4) from the value of the data point on the first day (day 1). A negative result denoted a deterioration, a positive result denoted an improvement, and 0 denoted no change.

Table 2 (page 75) reports the findings in level change for subject 1. Data for subject 1 showed no change in level for either the heterogeneous or homogeneous groups. A change in the data points between the first and last day of the condition was not found for subject 2 in either the heterogeneous or homogeneous group. Graphed data for subject 3, (see Figure 4 page 84), showed a change in level between the first and last days for only the heterogeneous group. The change was a deterioration of 4.6 percentage points. Graphed data for subject 4, (see Figure 5,

page 85) also revealed a change in the level between the first and last days for only the heterogeneous group. The percentage of initiations acknowledged in heterogeneous groups showed an improvement of 47.7 percentage points over the four sessions.

In addition to analyzing the data within conditions, the Tawney and Gast (1984) method of visually analyzing graphed data between adjacent conditions was used to compare conditions A and B. A series of steps, outlined below, were conducted to get the necessary information. Results for all subjects are reported in Table 3 (page 95).

1. Number of variables changed. One variable changed between conditions, pairing the subject with a nondisabled or similarly handicapped peer.
2. Change in trend direction. The trend direction estimated in step 2 of the within conditions analysis was used to determine the change in the direction of the trend and its effect on the data. A change was marked if the trend line changed from positive to negative, negative to positive, or from either positive or negative to level. Upon examination of the results

Table 3

Between condition analysis of four subjects comparing two conditions.

Steps	Subjects 1	2	3	4
1. Conditions compared	A / B	A / B	A / B	A / B
2. Number of variables changed	1	1	1	1
3. Change trend direction and effect	— \ (=) (-)	∧ (+) (-)	/ — (+) (=)	/ — (+) (=)
3. Change in trend stability	stable to variable	variable to variable	variable to stable	variable to stable
4. Change in level	100-0 (+100)	100-0 (+100)	50-0 (+50)	61.9-0 (+61.9)
5. Percent overlap	25%	0%	0%	0%

for all subjects presented in Table 3 (page 95), a definite change can be observed in the direction of the trend of the data paths between heterogeneous and homogeneous groups. Graphed data for subject 1, (see Figure 2, page 80) showed a change from a level trend direction in heterogeneous groups to a negative trend direction in homogeneous groups. Graphed data for subject 2, (see Figure 3, page 82) indicated a change from a positive trend direction in heterogeneous groups to a negative trend direction in homogeneous groups. Graphed data for subject 3, (see Figure 4, page 84) and subject 4, (see Figure 5, page 85) showed a change from a positive trend direction for heterogeneous groups to a level trend direction for homogeneous groups.

3. Change in trend stability. The information on trend stability for each condition was taken from the within conditions analysis and compared across conditions. A change in trend stability was noted as a change from stable to variable or from variable to stable.

Table 3 (page 95) reports the results of the change in trend stability for each subject. Data for

subject 1 changed in trend stability from stable to variable between the heterogeneous and homogeneous groups. Data for subject 2 did not change in trend stability, but stayed variable for both the heterogeneous and homogeneous groups. Data for subjects 3 and 4 changed from variable trends for heterogeneous groups to stable trends for homogeneous groups.

4. Change in level. To obtain the change in level between conditions A and B, the value of the last data point from condition A was subtracted from the value of the last data point from condition B. The direction of the change was identified as improved (+), deteriorated (-), or no change (o).

The changes in the level of data for all subjects are presented in Table 3 (page 95). The change in level for all subjects was a positive change, denoting an improvement in the percentage of social initiations acknowledged for all subjects during heterogeneous groupings. Both subjects 1 and 2 had a 100 percentage point change in the percentage of initiations acknowledged between homogeneous and heterogeneous

groups. Subject 3 had a change of 45.5 percentage points between heterogeneous and homogeneous groups, and subject 4 had a 61.9 percentage point change in the percentage of initiations acknowledged between partners in heterogeneous and homogeneous groups.

5. Percentage of overlap. Percentage of overlap of data points between conditions A and B was determined by counting the number of data points in condition B that fell within the range of the data points in condition A. The number of data points in B that fell into the range of data points in condition A was divided by the total number of data points in condition B. That sum was multiplied by 100 to determine the percentage of overlap.

Results of the analysis of percentage of overlap for all subjects appear in Table 3 (page 95). Only one subject had an overlap of 25% of the data points. Subjects 2, 3, and 4 had no overlap of data points.

According to the Tawney and Gast (1984) method of visually analyzing data, significant effects between the conditions in an alternating treatments design are determined when a consistent pattern of responding that

varies for each condition occurs with a large vertical distance between condition trend lines and no overlap of the data paths between the alternating conditions. The results presented indicate that significant differences in the percentage of social initiations acknowledged between peers were demonstrated for each subject between pairing with nondisabled peers and similarly handicapped peers. For all subjects, the heterogeneous groups had a greater percentage of social initiations acknowledged than in homogeneous groups.

The within conditions analysis for subject 1 reported in Table 2 (page 75) showed the data for the heterogeneous group was stable indicating a consistent pattern of responding. The stability in the data for subject 1 in heterogeneous groups can also be seen in Figure 2 (page 80). 100% of initiations were acknowledged by partners in heterogeneous groups. The data for homogeneous groups for subject 1 was variable as reported in Table 2 (page 75). Figure 2 (page 80) clearly shows the variability of the data for homogeneous groups as the data ranged from 0 to 100% of initiations acknowledged. There was little consistency

in the percentage of initiations acknowledged between partners in homogeneous groupings.

Even though data from the homogeneous groups for subject 1 were variable, the between conditions analysis reported in Table 3 (page 95) revealed that a significant difference was evident between the data paths for both heterogeneous and homogeneous groups. Figure 2 (page 80) shows the data path for the heterogeneous group at the 100% line for all sessions. The data path for homogeneous groups ranged from 0 to 100%, indicating a change to a variable data path from the stable data path for heterogeneous groups. According to Tawney and Gast (1984), the variable data path for subject 1 is acceptable because of the observed difference in the pattern of the two data paths. The data path for heterogeneous groups showed that all initiations were acknowledged between subject 1 and nonhandicapped peers whereas the data path for homogeneous groups showed that the percentage of initiations acknowledged between partners varied across all four sessions. Significance of the results is also validated by the change in the level of the data.

Table 3 (page 95) shows that for subject 1, the change between the last data point of the homogeneous groups and the last data point of the heterogeneous groups was a 100 percentage point difference, in the direction of the expected results.

The within conditions analysis for subject 2 revealed variable data paths for both heterogeneous and homogeneous groups. Figure 3 (page 82) shows one data point along the data path for heterogeneous groups (the second session) deviated from the pattern of the remaining three data points. A similar trend was seen in the data path for homogeneous groups shown in Figure 3 (page 82). The data point for the second session deviated from the stable pattern of the remaining three data points. It is interesting to note that it is the second data point that deviates in both the heterogeneous and homogeneous series of sessions even though the conditions were randomly presented across all eight sessions.

According to Tawney and Gast (1984) the variability in data is acceptable because the vertical distance between the trend lines for both data paths is

large. Figure 3 (page 82) shows that the percentage of initiations acknowledged between partners in heterogeneous groups occurred at or near the 100% mark while the percentage of initiations acknowledged between the partners in homogeneous groups occurred between the 0 and 50% mark.

The change in direction of the trend line reported in Table 3 (page 95) from accelerating for heterogeneous groups to decaying for homogeneous groups also gives support for significant results because the trend lines for each data path are going in opposite directions. A greater percentage of initiations were being acknowledged between subject 2 and nonhandicapped partners over successive sessions, and a lesser percentage of initiations were being acknowledged between subject 2 and handicapped peers over successive sessions. In fact, in only the second session were there any initiations acknowledged between subject 2 and the handicapped partner.

The large difference in the final data points for each group shown in Figure 3 on page 82 (100% for heterogeneous groups as compared to 0 for homogeneous

groups) indicates two separate data paths. The lack of any overlap in data also increases support for significant differences in the percentage of initiations acknowledged between partners in heterogeneous groups and homogeneous groups.

Data for the percentage of initiations acknowledged between partners in heterogeneous and homogeneous groups for subject 3, presented in Figure 4 (page 84), indicate a variable data path for heterogeneous groups and a stable data path for homogeneous groups. Despite the variability in the data for heterogeneous groups, there is a large vertical distance between the data paths for heterogeneous and homogeneous groups, meaning that the variable data path for heterogeneous groups is acceptable according to Tawney and Gast (1984).

The change in the direction of the trend line reported in Table 3 (page 95) between an improving trend for the percentage of initiations acknowledged between subject 3 and nonhandicapped peers, and a level trend for the percentage of initiations acknowledged between subject 3 and handicapped partners gives

support for significant results. Based upon the analysis of the direction of the trend line, the percentage of initiations acknowledged between subject 3 and nonhandicapped peers should continue to improve, while the percentage of the initiations acknowledged between subject 3 and handicapped peers should continue to remain constant at 0.

The results for subject 3 indicate a significant difference between the percentage of initiations acknowledged in heterogeneous groups as compared to homogeneous groups because the large difference in the final data points for each group shown in Figure 4 on page 84 (45.4% for heterogeneous groups as compared to 0 for homogeneous groups) indicates two separate data paths. Figure 4 (page 84) also indicates no overlap between the two data paths, a further indication that the grouping caused the difference in the percentage of initiations acknowledged.

Figure 5 (page 85) presents the graphed data for the percentage of initiations acknowledged in heterogeneous and homogeneous groups for subject 4. Although the data path for the heterogeneous group was

variable, Table 3 (page 95) reported an improving-accelerating trend line. Across all four sessions with nonhandicapped partners, the percentage of initiations acknowledged between partners increased. In contrast, the data path for the homogeneous groups indicated that no initiations were acknowledged between subject 4 and the handicapped partners. The result was a stable data path with a level trend line. The percentage of initiations acknowledged between subject 4 and nonhandicapped peers was greater than the percentage of initiations acknowledged between subject 4 and handicapped peers.

The large difference between the final data paths for heterogeneous and homogeneous groups (a difference of 61.9 percentage points) indicates that there are two separate data paths. Figure 5 (page 85) also clearly indicates that data between the heterogeneous and homogeneous groups does not overlap, indicating a strong experimental effect.

When there are variable data paths, the degree of experimental control depends upon the change in level from one condition to the next and the percentage

of data overlap (Tawney & Gast, 1984). In this study, the differences between the final data points for each condition is large for all subjects. Table 3 (page 95) reported that subjects 1 and 2 had differences of 100 percentage points between the percentages of initiations acknowledged in the final session in heterogeneous and homogeneous groups, subject 3 had a difference of 45.4 percentage points between the percentage of initiations acknowledged in the final session of heterogeneous groups compared to the percentage of initiations acknowledged in homogeneous groups, and subject 4 had a difference of 61.9 percentage points between the percentage of initiations acknowledged in the final session in heterogeneous groups as compared to homogeneous groups.

There was no overlap in data for three of the four students. Figure 2 (page 80) shows an overlap in data between the two conditions for subject 1. Table 3 (page 95) reported that 25% of the data overlapped. The lack of data overlap between the two conditions for three students that is shown in Table 3 (page 95) indicates a strong experimental effect, however the

overlap in data between heterogeneous and homogeneous groups for subject 1 means that the experimental effects are weaker and must be interpreted with caution for all subjects.

Based upon the visual analysis outlined by Tawney and Gast (1984), the results of this study are interpreted as having experimental significance. A greater percentage of initiations were acknowledged by students with severe handicaps and their partners when the partners were nonhandicapped peers than when their partners were similarly disabled peers.

Type of Interaction

The manner in which subjects initiated and acknowledged interactions with their peers and staff were coded according to three modes: the motor/gestural mode, for example, moving closer to partner, reaching towards partner, waving at partner, the verbal/vocal mode, for example, speaking or making noises specifically to gain the partner's attention, and the visual mode, for example, looking at partner. The total number of initiations and the total number of acknowledgements executed using motor, vocal, and

visual behaviors, were calculated. To get the percentage of initiations for each mode, the sum of each behavioral category was divided by the total number of initiations to get a percentage of the total number of initiations that were motor, vocal, visual, or a combination of behaviors. The same procedure was used to get the percentage of acknowledgements that were motor, vocal, visual or a combination of behaviors. The percentage of initiations and acknowledgements executed using motor, vocal and visual behaviors for subjects, partners, and staff in both heterogeneous and homogeneous groupings are presented in Tables 4, 5, 6, and 7. Differences in the manner in which the subjects initiated and acknowledged interactions with their nonhandicapped peers and their handicapped peers were found for all four subjects.

Subject 1 used a greater percentage of vocal behaviors to initiate interactions with a nonhandicapped peer than he did with a handicapped peer. Table 4 reports that 52.4% of his initiations towards partners or staff in the heterogeneous groups were vocal as compared to 18.2% of his initiations in

Table 4

Percentage of initiations and acknowledgements using motor, vocal and visual behaviors, or a combination of behaviors, for subject 1 in heterogeneous and homogeneous groups.

	Heterogeneous Groups						Homogeneous Groups					
	Initiations			Acknowledgements			Initiations			Acknowledgements		
	Subject	Partner	Staff	Subject	Partner	Staff	Subject	Partner	Staff	Subject	Partner	Staff
Motor	19%	20%	—	35%	42.9%	—	81.8%	—	6.7%	46%	16.7%	50%
Vocal	52.4%	50%	—	20%	33.3%	—	18.2%	—	93.3%	23%	—	50%
Visual	—	—	—	27.5%	9.5%	—	—	—	—	8%	83.3%	—
Combination	28.6%	30%	—	17.5%	14.3%	—	—	—	—	23%	—	—

Note 1. Combination refers to simultaneous use of motor and vocal, motor and visual or vocal and visual.

homogeneous groups. In homogeneous groupings, subject 1 used a greater percentage motor behaviors (81.8%) than vocal behaviors (18.2%) to initiate interactions with handicapped peers. For example, subject 1 would reach towards or move closer to a handicapped partner in order to exchange an object. In heterogeneous groups, subject 1 would speak to his partner to initiate an interaction, even if it was to exchange an object.

Subject 1 used a greater percentage of visual behaviors to acknowledge initiations with nonhandicapped partners (27.5%) than with handicapped partners (8%). One explanation for the greater percentage of visual acknowledgements is that nonhandicapped partners called subject 1 by name and he would respond by looking at his partner.

In comparison to nonhandicapped partners, subject 1 used similar behaviors for initiating and acknowledging interactions. Table 4 reports that nonhandicapped partners used motor (20%), vocal (50%), or a combination (30%) of motor and vocal behaviors to initiate interactions with subject 1. When

acknowledging initiations, both subject 1 and nonhandicapped partners used motor (subject 1, 35%, nonhandicapped partners, 42.9%) vocal (subject 1, 20%, nonhandicapped partners, 33.3%), visual (subject 1, 27.5%, nonhandicapped partners, 9.5%), behaviors, or combinations (subject 1, 17.5%, nonhandicapped partners, 14.3%) of behaviors. Subject 1 used a greater percentage of visual behaviors to acknowledge initiations (27.5%) than nonhandicapped partners (9.5%), but that could be explained by the fact that the nonhandicapped partner would initiate an interaction by calling subject 1 by name. Subject 1 acknowledged by looking at his partner.

In homogeneous groups, staff used a greater percentage of verbal initiations (93.3%) than movement (6.7%), but used the same percentage of verbal (50%) and movement (50%) acknowledgements with subject 1. Staff only interacted with subject 1 when subject 1 was paired with a handicapped partner. Staff initiated 15 interactions with subject 1 by calling subject 1's name to get his attention. Staff only acknowledged 2 initiations from subject 1: on one occasion, staff

responded verbally, and on another occasion, staff responded by returning a ball.

Handicapped partners acknowledged six initiations from subject 1, using a greater percentage of visual behaviors (83.3%) than motor behaviors (16.7%) or vocal behaviors (0). When initiating interactions with handicapped partners, subject 1 either used the partner's name or gave an object to his partner. In either case, the handicapped partner acknowledged by looking at subject 1.

Table 5 reports the type of interactions for subject 2. In both the homogeneous and heterogeneous groups, motor behavior (79.4% and 84.2%) was the preferred mode of initiating (79.4 and 84,2%) and acknowledging initiations (88.9% and 75.5%) above vocal (0 and 0), visual (8.8% and 5.3% of initiations and 11.1% and 13.3% of acknowledgements), or a combination of behaviors (11.8% and 10.5% of initiations, and 33.3% and 11.2% of acknowledgements). Vocal behaviors were not used to initiate or acknowledge initiations in either heterogeneous or homogeneous groups. Subject 2 used a combination (10.5%) of behaviors to initiate

Table 5

Percentage of initiations and acknowledgements using motor, vocal, and visual behaviors, or a combination of behaviors, for subject 2 in heterogeneous and homogeneous groups.

	Heterogeneous Groups						Homogeneous Groups					
	Initiations			Acknowledgements			Initiations			Acknowledgements		
	Subject	Partner	Staff	Subject	Partner	Staff	Subject	Partner	Staff	Subject	Partner	Staff
Motor	84.2%	58.8%	100%	75.5%	76.9%	–	79.4%	–	33.3%	88.9%	–	100%
Vocal	–	25.4%	–	–	7.7%	–	–	–	33.3%	–	100%	–
Visual	5.3%	2%	–	13.3%	–	–	8.8%	–	–	11.1%	–	–
Combination	10.5%	13.8%	–	11.2%	15.4%	–	11.8%	–	33.3%	–	–	–

and acknowledge initiations (11.2%) in heterogeneous groups, but only to initiate (11.8%) interactions in homogeneous groupings.

In heterogeneous groups, the difference between the percentage of initiations and the percentage of acknowledgements using movements (84.2% and 75.5% respectively) can be explained by a greater use of visual acknowledgments. Nonhandicapped partners called the subject by name and she acknowledged by looking at the partner. In the homogeneous groups, the difference between the percentage of initiations and acknowledgements using movements (79.4% and 88.9%) can be attributed to the use of a combination of motor and visual behaviors to initiate interactions. When initiating interactions with handicapped students, subject 2 would run up to the handicapped students and position her face right in front of theirs until they looked at her or moved away.

The difference in the percentage of acknowledgements using motor behavior between the heterogeneous and homogeneous grouping (75.5% and 88.9% respectively) is attributed to subject 2's greater use

of visual responses in the heterogeneous groupings (13.3% compared to 11.1% in homogeneous groups), by responding to her name by looking at the partner, and a greater use of combinations of behaviors (11.2% in heterogeneous groups as compared to 0 in homogeneous groups).

The difference between the manner in which subject 2 initiated and acknowledged initiations and nonhandicapped partners initiated and acknowledged interactions is in the use of speech. Subject 2 did not use speech to initiate or acknowledge even though she was able to speak. Nonhandicapped partners used vocal behaviors (25.4%) slightly less than they used motor behaviors (58.8%) to initiate interactions. Nonhandicapped partners also used a greater percentage of motor behaviors (76.9%) to acknowledge initiations than they used vocal behaviors (7.7%). Like subject 2, nonhandicapped partners used a greater percentage of motor behaviors to initiate (58.8%) and acknowledge initiations (76.9%) than vocal (25.4% and 7.7%), or visual (2% and 0) behaviors, or a combination of behaviors (13.8% and 15.4%).

Staff predominantly used motor (33.3% and 100%) and vocal behaviors (33.3% and 0) to initiate and acknowledge initiations with subject 2. Table 5 shows that 100% of the acknowledgements by staff were movement while initiations were equally distributed between movement (33.3%), speech (33.3%), and a combination of movement and speech (33.3%).

Table 6 summarizes the percentage of initiations and acknowledgements using motor, vocal, and visual behaviors for subject 3. Subject 3 exclusively used motor behaviors to initiate interactions in heterogeneous groups (100%) and acknowledge interactions in homogeneous groups (100%). Differences in the manner in which subject 3 initiated and acknowledged interactions in heterogeneous and homogeneous groups occurred with the increased use of visual behavior (35.3%) to acknowledge initiations or a combination of behaviors (5.9%) when responding to initiations in heterogeneous groups. Nonhandicapped partners would say "stand up" and subject 3 would look at the partner and stand (a combination of visual and motor behaviors), or the nonhandicapped partner would

Table 6

Percentage of initiations and acknowledgements using motor, vocal, and visual behavior or a combination of behaviors, for subject 3 in heterogeneous and homogeneous groups.

	Heterogeneous Groups						Homogeneous Groups					
	Initiations			Acknowledgements			Initiations			Acknowledgements		
	Subject	Partner	Staff	Subject	Partner	Staff	Subject	Partner	Staff	Subject	Partner	Staff
Motor	100%	91.8%	100%	58.8%	100%	–	–	100%	55.6%	100%	–	–
Vocal	–	8.2%	–	–	–	–	–	–	–	–	–	–
Visual	–	–	–	35.3%	–	–	–	–	–	–	–	–
Combination	–	–	–	5.9%	–	–	–	–	44.4%	–	–	–

call subject 3 by name and she would look at the partner.

In homogeneous groups, subject 3 exclusively used motor behaviors (100%) to respond to initiations. Staff made all of the initiations towards subject 3 in homogeneous groups. Staff would take subject 3 by the arm and direct her to move; subject 3 would follow. Table 6 shows that 58.8% of acknowledgments in heterogeneous groups were movement as compared to 100% of acknowledgements in homogeneous groups.

Nonhandicapped partners predominantly used motor behaviors to initiate (91.8%) and acknowledge (100%) interactions with subject 3. The large use of movements (91.8% of initiations and 100% of acknowledgements) may have occurred because subject 3 did not speak. Subject 3 made sounds either when frustrated (screamed) or when involved in self-stimulatory rocking (hummed). Nonhandicapped peers may not have been rewarded by speaking to subject 3 because she did not respond by speaking.

Staff predominantly used motor behaviors to initiate interactions (100% of initiations in

heterogeneous groups, 55.6% of initiations in homogeneous groups) but also used a combination of vocal and motor behaviors (44.4%) in homogeneous groups. Staff used gestures to get subject 3's attention, or staff would call subject 3 by name while gesturing (movement and sound).

The summarized results for type of interactions for subject 4 are shown in Table 7. Subject 4 used a greater percentage of motor behaviors to initiate (100% and 50%) and acknowledge initiations (57.8% and 78.3%) in both heterogeneous and homogeneous groups, than visual behaviors (0 and 50% to initiate, 33.3% and 13% to acknowledge) or vocal behaviors (0 to initiate and acknowledge). Table 7 shows that although a greater percentage of initiations and acknowledgements were motor behaviors, visual behaviors were also used for acknowledging initiations (33.3%) in heterogeneous groups and initiating interactions (50%) in homogeneous groups. Motor behaviors were exclusively used (100%) to initiate interactions in heterogeneous groups, but were used for only 50% of the initiations in homogeneous groups. There were only two initiations

Table 7

Percentage of initiations and acknowledgements using motor, vocal, visual behaviors or a combination of behaviors, for subject 4 in heterogeneous and homogeneous groups.

	Heterogeneous Groups						Homogeneous Groups					
	Initiations			Acknowledgements			Initiations			Acknowledgements		
	Subject	Partner	Staff	Subject	Partner	Staff	Subject	Partner	Staff	Subject	Partner	Staff
Motor	100%	48.9%	–	57.8%	100%	75%	50%	–	35.7%	78.3%	–	–
Vocal	–	36.5%	–	–	–	–	–	–	42.9%	–	–	100%
Visual	–	–	–	33.3%	–	–	50%	–	–	13%	–	–
Combination	–	14.6%	–	8.9%	–	25%	–	–	21.4%	8.7%	–	–

by subject 4 in homogeneous groups, one by movement and one by looking. Both initiations were to staff. One initiation occurred when subject 4 gave a ball to a staff member (movement). The other initiation occurred when subject 4 stood in front of a staff person and looked at her until she was acknowledged by the supervising staff (visual).

Subject 4 initiated five times in heterogeneous groups. One initiation occurred when subject 4 kicked a ball to her nonhandicapped partner (movement). The remaining initiations were directed towards staff. On all occasions, subject 4 initiated by reaching towards staff (movement).

A greater percentage of acknowledgements in homogeneous groups were movement (78.3%) in comparison to heterogeneous groups (57.8%). When handicapped peers initiated interactions with subject 4, subject 4 moved away from the person (movement). When staff initiated interactions with subject 4, it was to redirect subject 4 to play with her partner. Subject 4 acknowledged by moving away from the staff (movement).

In heterogeneous groups, a greater percentage of acknowledgments were visual behaviors (33.3%) than a combination of motor and visual behaviors (8.9%). Visual behaviors were also used a greater percentage of the time in heterogeneous groups (33.3%) than in homogeneous groups (13%). An explanation for the increased percentage of visual acknowledgements (33.3% in heterogeneous groups as compared to 13% in homogeneous groups) may be that nonhandicapped partners called subject 4 by name and she acknowledged by looking at her partner (visual) or looking and moving towards the partner (combination). In homogeneous groups, subject 4 only interacted with staff. Staff initiated interactions with subject 4 by calling her name, to which she would respond by looking at the staff (visual) or moving away from the staff member.

Nonhandicapped partners used a slightly greater percentage of motor behaviors (48.9%) than vocal behaviors (36.5%) to initiate interactions with subject 4. Vocal initiations consisted of calling subject 4 by name, saying "come here", or "what do you want to do?". Nonhandicapped partners exclusively used motor

behaviors to acknowledge initiations (100%). The frequent use of motor behaviors (100%) to acknowledge initiations from subject 4 may have resulted because subject 4 did not speak.

Staff used a greater percentage of vocal behaviors (42.9%) than motor behaviors (35.7%) to initiate interactions with subject 4 in homogeneous groups, but exclusively used motor behaviors (100%) to acknowledge initiations from subject 4 in homogeneous groups. In heterogeneous groups, staff did not initiate interactions with subject 4, but staff acknowledged initiations from subject 4. Staff used a greater percentage of motor behavior (75%) than vocal (0), visual (0) or a combination (25%) of behaviors to acknowledge initiations. Staff acknowledged initiations from subject 4 by redirecting subject 4 to play with her partner. Redirection either was a point (motor) or "go with your partner" and a point (combination). In homogeneous groups, staff initiated by calling subject 4 by name (vocal), taking subject 4 to play with her partner (motor), or calling her name and pointing or touching her (combination).

Overall, subject's used motor behaviors to initiate and acknowledge initiations a greater percentage of the time than they used vocal, visual, or a combination of behaviors. Subject 1 used a greater percentage of vocal behaviors to initiate interactions in heterogeneous groups (52.4%), than homogeneous groups (18.2%), while subjects 2, 3, and 4 did not use vocal behaviors to initiate or acknowledge initiations in either heterogeneous or homogeneous groups. Nonhandicapped peers used vocal behaviors more often to initiate and acknowledge initiations with partners who spoke. Nonhandicapped peers used vocal behaviors more often to initiate and acknowledge initiations than did any of the severely handicapped subjects. Staff generally used motor and vocal behaviors to initiate and acknowledge initiations. Only with subject 3 did staff exclusively use motor behaviors to initiate and acknowledge initiations. When staff initiated interactions with subjects who were in heterogeneous groups, staff exclusively used motor behaviors.

Duration of Interactions

Duration of interactions were recorded by a stop watch. The stop watch was started when the partners began an interaction and was stopped when the interaction ceased. An interaction ceased when one of the interacting persons shifted attention away from the other interacting person by looking away, moving away, or turning away (Gaylord-Ross, Haring, Breen, & Pitts-Conway, 1984). Duration of interactions were recorded in minutes. The total number of minutes the partners could interact was 5 minutes. Results of the mean duration of interactions during 5 minutes of play appear in Table 8.

Table 8 indicates that during the five minute grouping, each of the severely handicapped subjects interacted for a longer duration with their nondisabled partners than they did with their handicapped peers. Subject 1 always interacted with his nondisabled partners for the full five minute play period, whereas, subjects 2, 3, and 4 usually interacted with their partners for an average of 3:13 minutes, 2:29 minutes, and 0:17 seconds, respectively. Notable is the

Table 8

Mean duration of interactions during 5 minutes of play.

	Subjects			
Groupings	1	2	3	4
Heterogeneous	5:00	3:13	2:29	0:71
Homogeneous	0:15	0:00	0:00	0:00

amount of time reported in Table 8 that the four subjects spent in interactions with their handicapped peers. Subject 1 spent less time interacting with handicapped peers than with nonhandicapped peers (a mean of 5:00 minutes as compared to a mean of 15 seconds), whereas subjects 2, 3, and 4 spent no time interacting with handicapped peers. Nonhandicapped peers were observed to continually initiate interactions with the severely handicapped subjects. If the severely handicapped subjects did not acknowledge an initiation from a nonhandicapped peer, the nonhandicapped peer would initiate another interaction. When the subject with severe handicaps wandered away from the nonhandicapped partner, the nonhandicapped partner would follow and attempt to engage the severely handicapped subject in an interaction. In contrast, handicapped partners did not continually initiate interactions with their severely handicapped partner.

Social Turn-taking

During the recess play period, two of the severely handicapped subjects expanded upon the initial

initiation-acknowledgement interaction by following the acknowledgement immediately with another response. These expansions were coded as turn taking. In this study, turn taking occurred when the students were playing with a ball, rolling it back and forth, or when the students were playing a game of bowling. The number of turns taken by each partner during the five minute taping session were recorded. Results of turn-taking for each subject appear in Table 9.

Table 9 reports that turn-taking occurred for only two of the students, subjects 1 and 2, in heterogeneous groupings. Turn-taking did not occur in groupings of handicapped peers for any of the students. Subject 1 engaged in turn taking in only two of the sessions with nonhandicapped peers. During these sessions, subject 1 was involved in a bowling game with his partners. The partner set up the pins and then each player (subject 1 and his partner) took a turn at rolling the bowling ball. Subject 2 engaged in turn-taking during 3 of the sessions with nonhandicapped peers. Turn-taking during sessions one, three, and four occurred when subject 2 and the nonhandicapped partner played with a large ball

Table 9

Number of turns taken by each subject during five minutes of play in heterogeneous and homogeneous groups.

	Subjects			
Sessions by group	1	2	3	4
Heterogeneous				
Session 1	7	41	0	0
Session 2	0	0	0	0
Session 3	6	5	0	0
Session 4	0	38	0	0
Homogeneous				
Session 1	0	0	0	0
Session 2	0	0	0	0
Session 3	0	0	0	0
Session 4	0	0	0	0

by rolling it back and forth to each other.

Interactions with Staff

Although staff were instructed not to interact with students except for reasons involving safety, staff engaged in several interactions with the four subjects during the five minute play period. The number of interactions between staff and each subject was recorded. The number of interactions the subjects had with staff were divided by the total number of interactions that took place between the subject and others. The result was multiplied by 100 to obtain a percentage of the number of interactions with staff of the total interactions.

Table 10 presents the percentage of interactions with partners, staff, and others as a percentage of total interactions during the 5 minute play time for each of the subjects. Partner refers to the person the subject was paired with for the play period, staff refers to the person who was supervising the play period, and others refers to any persons who were not buddies or staff.

For all students, a greater percentage of their

Table 10

Interactions with partners, staff, and others as a percentage of total interactions in heterogeneous and homogeneous groups.

	Subjects			
Interactions by grouping	1	2	3	4
Heterogeneous				
Partners	100%	98.4%	90.7%	86%
Staff	0	1.6%	4.6%	12%
Other*	0	0	4.6%	2%
Homogeneous				
Partners	28.6%	5.6%	0	0
Staff	71.4%	50.0%	78.9%	88.5%
Other*	0	4.4%	21.0%	11.5%

*Other denotes interactions with another person who was not a staff or a buddy.

total interactions when in homogeneous groupings occurred with staff. Only one interaction was necessary for reasons of safety. This interaction occurred when subject 2 climbed on a climbing apparatus that was not properly secured to the wall. Staff immediately intervened by calling subject 2 by name and assisting her off the climbing bars.

Table 10 shows that subject 1 only interacted with nonhandicapped peers in heterogeneous groups, but had a greater percentage of interactions with staff (71.4%) than with handicapped peers in homogeneous groups (28.6%). Subjects 2, 3, and 4 interacted with staff when in both heterogeneous and homogeneous groupings, although a greater percentage of their total interactions occurred with staff than with buddies or others during homogeneous groupings.

When subjects were in homogeneous groupings, many of the staff interactions were prompts. Staff would approach the subject and prompt them to interact with their partner, or bring the pair more toys if there were no interactions occurring. Staff would regroup

subjects with their partners, if one or both children had wandered away from their partner.

Subject 4 was the only subject who consistently approached staff and initiated contact. Subject 4 initiated contact with staff five times over the eight sessions. One initiation occurred when subject 4 was paired with a handicapped partner whom she had wandered away from, and four initiations occurred when subject 4 was paired with a nonhandicapped peer. On all five occasions, subject 4 spontaneously approached the staff.

Individual Subject's Results

Subject 1 consistently had a greater frequency of interaction with nondisabled peers than he did with disabled peers. Figure 2 (page 80) shows that 100% of the initiations were acknowledged between subject 1 and nonhandicapped partners, whereas, the percentage of initiations acknowledged for subject 1 with handicapped partners ranged from 0 to 100%.

Subject 1 acknowledged all of the initiations directed from nonhandicapped partners to him and his nonhandicapped partner acknowledged all of the

initiations from subject 1. Handicapped partners did not make any initiations towards subject 1, however, subject 1 made 9 initiations towards handicapped partners as compared with 21 initiations towards nonhandicapped peers. In contrast, nonhandicapped peers made 40 initiations towards subject 1.

Much of the play between subject 1 and his nonhandicapped peers involved imaginary games. A small toy car was used for all play during the heterogeneous groupings. Subject one hung onto the car with one hand while his partner pushed his wheelchair. The pair would pretend to be going on a trip somewhere and stop for gas, groceries, or to play a game of bowling. The nondisabled partner directed the game, but subject 1 would suggest stopping at imaginary stores (for example grocery stores, gas stations) and then would assist with "picking up the groceries" (bowling pins), "filling up with gas" (using the bowling pins) and directing his partner where to push him.

Subject 1 interacted little with partners who were similarly handicapped. Table 10 (page 131) shows that 28.6% of the interactions in homogeneous groups

occurred between subject 1 and his handicapped partner, while 71.4% of the interactions occurred between subject 1 and staff. In homogeneous settings, subject 1 interacted more often with staff than with his handicapped buddy.

Although subject 1 spontaneously interacted with his nondisabled peers, interactions were not spontaneously initiated with handicapped peers. When paired with similarly disabled peers, subject 1 sat, watching the nondisabled students playing with other handicapped children. When staff prompted subject 1 to "play with" a handicapped buddy, subject 1 would move closer to the buddy and initiate an interaction. When no response was forthcoming, subject 1 would look away towards other children or move away from the handicapped partner. The motivation to initiate interactions may be lacking when there is a history of no reinforcement. Subject 1 may have a history of receiving little or no feedback from handicapped peers.

Subject 2 interacted with both nonhandicapped and handicapped partners, although there were a greater percentage of initiations acknowledged in heterogeneous

groups. Figure 3 (page 82) shows that between 70.8% and 100% of initiations were acknowledged between partners.

Subject 2 made 12 initiations towards nonhandicapped partners as compared to three initiations towards handicapped partners. In contrast, nonhandicapped partners made 51 initiations towards subject 2, and handicapped partners made no initiations towards subject 2. Subject 2 acknowledged 86% of the initiations from nonhandicapped peers, whereas nonhandicapped partners acknowledged 100% of the initiations from subject 2.

Subject 2 entered into turn-taking games with nonhandicapped peers and would stay with them throughout the recess period. During play with nonhandicapped peers, subject 2 would also initiate interactions with her handicapped peers. On one occasion, subject 2 approached a handicapped peer and stood by her. Her nonhandicapped partner followed subject two to where she was standing next to the handicapped peer. Twice the nonhandicapped partner tried to divert subject 2 and engage her in throwing a

ball. Subject 2 took the ball from the nonhandicapped partner and passed it to the handicapped peer. The handicapped peer threw it away and subject 2 ran to retrieve it. Subject 2 then returned to playing with the nonhandicapped partner. In another instance when subject 2 went over to a handicapped peer, subject 2's nonhandicapped partner positioned herself between subject 2 and the handicapped peer, and verbally tried to get subject 2's attention.

In homogeneous groupings subject 2 did not stay with her partner for any of the four sessions. She moved around the gym and approached several of her handicapped peers. Table 10 (page 131) shows that 44.4% of her interactions in homogeneous groups were with other handicapped students. She approached other handicapped students at their level, that is, she would bend down if the children were sitting on the floor, and would stare at them. She did not reach towards them or further attempt to initiate any interactions. She stayed this way for a while and then ran away. If the child moved away before subject 2 ran away, she would chase them. During one session, subject 2 sat

down in front of subject 4, facing her, and imitated some of subject 4's behavior. For example, when subject 4 moved her head from side to side, subject 2 moved her head from side to side.

Figure 4 (page 84) shows that subject 3 interacted with more frequency with her nondisabled peers (between 31.7% and 66.6% of initiations were acknowledged between subject 3 and nonhandicapped partners) than with her handicapped peers (no initiations were acknowledged). She made 6 initiations towards her nonhandicapped partners in comparison to 0 initiations towards handicapped partners. Nonhandicapped partners made 83 initiations towards subject 3 while handicapped partners made 2 initiations towards subject 3. Subject 3 acknowledged 40% of the initiations from nonhandicapped peers, and none of the initiations from handicapped peers. Nonhandicapped peers acknowledged 100% of the initiations from subject 3.

Subject 3 preferred to sit. After she was paired with her partner for recess, unless the partner or the staff took her by the hand and led her, she did not move. Nonhandicapped partners would lead her by the

hand to different areas of the gym. When paired with handicapped peers, subject 3 sat until a staff member prompted her to move.

Even though subject 3 did not wander away from her partners, she only stayed paired with one of her handicapped partners. Her handicapped partner was in a wheelchair and could not move the chair without assistance. During the remaining three sessions in homogeneous groupings, the handicapped partners wandered away.

The graphed results for subject 4 that appear in Figure 5 (page 85) show that subject 4 had a greater frequency of interactions with her nondisabled peers (between 14.2% and 61.9% of initiations were acknowledged between partners) than she did with handicapped peers (no initiations were acknowledged between partners). Subject 4 acknowledged 50% of the initiations from her nonhandicapped partner. The nonhandicapped partners acknowledged 100% of the initiations from subject 4. Subject 4 initiated 1 interaction with her nonhandicapped peers. Subject 4 initiated 5 interactions with the supervising staff

person, 1 when subject 4 was paired with a handicapped partner and 4 when she was paired with a nonhandicapped partner.

Subject 4 wandered during the entire recess period, whether she was paired with a nonhandicapped or handicapped peer. Nondisabled partners followed her and attempted to engage her in play, but the handicapped partners did not follow or attempt to follow. It appeared as if subject 4 was trying to avoid her nonhandicapped partner because she always walked away from the partner, and acknowledged only 50% of the nonhandicapped partners initiations.

Conclusion

The frequency of interactions between the four subjects and their nonhandicapped partners was greater than the frequency of interaction with their handicapped partners. Frequency of interaction was measured by the percentage of initiations acknowledged between peers. For all subjects, more initiations were acknowledged with nonhandicapped partners, than with handicapped partners.

Several differences were found between the heterogeneous and homogeneous groups for each of the subjects. The manner in which the four subjects initiated and acknowledged interactions with nonhandicapped and handicapped students differed. Three of the four subjects predominantly used movements to initiate and acknowledge interactions with both nonhandicapped and handicapped students, while one subject used more speech to initiate interactions with nonhandicapped peers and more movements to initiate interactions with handicapped students.

Differences between how the subjects initiated and acknowledged interactions and how their nonhandicapped partners and staff initiated and acknowledged interactions were slight. Nonhandicapped partners used a greater percentage of vocal behaviors to either initiate or acknowledge initiations than did the severely handicapped subjects Nonhandicapped peers used a greater percentage of vocal behaviors than motor or visual behaviors, to initiate interactions with subject 1, but nonhandicapped partners used a greater percentage of motor behaviors than vocal or visual

behaviors to initiate interactions with the other subjects. Staff used both vocal and motor behaviors to initiate and acknowledge initiations with all subjects.

All subjects stayed paired with their nonhandicapped partners. The mean duration of interacting with partners was greater for all subjects in heterogeneous groups as compared to homogeneous groups, and for two subjects turn-taking occurred in heterogeneous groups.

In homogeneous groups all subjects interacted more with staff than with either their handicapped partner or any other student. There was no turn-taking between subjects and their handicapped partners, and for two subjects, there were no interactions.

CHAPTER VI

Discussion

The results of this study clearly indicate that the frequency of interaction was greater when the four students with severe handicaps were paired with a nonhandicapped peer than when they were paired with handicapped peers. The results suggest that pairing a nonhandicapped child with a severely handicapped child during an unstructured recess period will result in more social exchanges than when two severely handicapped children are paired. These observations are similar to the results of other studies (Brinker, 1985; Guralnick, 1980) that have analyzed the interactions between heterogeneous and homogeneous groupings of children, where one child has had severe handicaps.

Brinker (1985) found that more interactions occurred between students with severe handicaps and their peers when they were in integrated settings than occurred between handicapped students in segregated settings. Students were observed in both structured and unstructured settings, including classrooms,

hallways, gym, recess, and the lunchroom. Brinker's study used a sample of 226 students with severe handicaps who had recently been integrated into regular education schools.

Brinker recorded the number of social bids directed from the student with severe handicaps towards another student, and the number of social bids directed at the student with severe handicaps from another student. A social bid was defined as any behavior directed towards another student that included smiling, reaching towards, or vocalizing.

Brinker (1985) found a greater number of social bids were directed at the student with severe handicaps from nonhandicapped peers than from the student with severe handicaps towards their nonhandicapped peers. Similar observations were made in the present study. The four students with severe handicaps initiated fewer interactions with their handicapped partners as compared with their nonhandicapped partners, and the nonhandicapped partners initiated more interactions than the handicapped partners with each of the subjects.

Guralnick (1980) found the same results with heterogeneous groupings of preschoolers. Guralnick grouped children with varying degrees of mental handicaps with nonhandicapped preschoolers during a free-play session. He measured the frequency of giving and receiving of toys. Children with severe handicaps interacted more with their less disabled peers than with their similarly handicapped peers.

Brinker (1985) suggested that when children with severe handicaps are grouped with children who have similar social and communication skills, social interaction breaks down. It is speculated that this was the case in the present study. When the children with severe handicaps were paired with similarly handicapped peers, usually they wandered away from their partner, removing all opportunities to interact. When the children with severe handicaps wandered away from their nonhandicapped partner, the partner would usually follow them and attempt to get their attention.

Nonhandicapped partners constantly presented opportunities for interacting with their partners. They used a variety of toys and means of getting the

children with severe handicaps to play with them. In response to this constant stream of initiations, the children with severe handicaps interacted longer with their nonhandicapped peers and were less likely to wander away. Two of the children even entered into social turn-taking with their partners. Social turn-taking occurred when one partner expanded upon the initial initiation-acknowledgement sequence. For example, a game of ball rolling was continued past the initial initiation-acknowledgement sequence where each partner continued to return the ball to the other partner.

Observations made in this study also show that students interacted more with staff when paired with similarly handicapped peers than when they were paired with nonhandicapped peers. Staff usually initiated the interaction to prompt the severely handicapped students to play with their handicapped partner. Subject 4 was the only subject who approached the staff and initiated contact, regardless of being paired with a nonhandicapped or handicapped partner. Hill and Whiteley (1986) found that children with severe

multiple handicaps interacted more frequently with staff than with nonhandicapped peers in mainstreamed classrooms. Hill and Whiteley (1986) suggested that the children with severe handicaps required more training in social skills to promote interactions with peers. Shores, Hester, and Strain (1976) found similar results with behaviorally handicapped children. When adults were present, behaviorally handicapped children interacted with the adults more often than with their peers. Shores, Hester, and Strain (1976) suggested that adults provided consistent positive reinforcement.

Differences were found for each of the four subjects in the manner in which the children with severe handicaps interacted with their nonhandicapped and handicapped peers. Of the two students who spoke, one tended to use a greater percentage of vocal behaviors (speech) than motor behaviors to initiate interactions with nonhandicapped peers. The other severely handicapped subjects did not use vocal behaviors to initiate or acknowledge initiations, unless vocal behaviors were accompanied by motor behaviors. When interacting with handicapped students,

all subjects with severe handicaps used a greater percentage of motor than vocal or visual behaviors to initiate and acknowledge initiations.

The greater percentage of vocal behaviors used by subject 1 to initiate interactions with nonhandicapped peers could have been prompted by the natural vocal cues from the nonhandicapped partners. Nonhandicapped partners used more vocal than motor or visual behaviors to initiate interactions with subject 1. Another speculation is that subject 1 had imitated typical staff interactions with students who have communication disorders. Adults often use one word cues or gestural prompts to assist children with severe handicaps. The four subjects in this study had received their education program in a segregated setting where staff interactions with children dominated the routine. It is not beyond speculation to suggest that the students had plenty of opportunity to imitate the social behavior of the adults. Further analysis of the interaction patterns and communicative behavior of students with severe handicaps would be worthwhile.

The nonhandicapped peers predominantly used verbal interactions during play with the exception of nonhandicapped partners for subject 3. The nonhandicapped partners for subject 3 used movements to initiate and acknowledge interactions. Guralnick and Paul-Brown (1977) examined adjustments made by nonhandicapped preschoolers when interacting with handicapped peers and found that nonhandicapped preschoolers adjusted their speech to the level of their handicapped peers. Perhaps nonhandicapped students were adjusting their manner of communication to the handicapped subjects, by using more movements than spoken initiations and acknowledgements. Further analysis of the length and type of utterance would give information necessary to determine if the nonhandicapped students were adjusting their manner of communication to the level of the handicapped students.

Some difficulties were experienced in thoroughly recording verbal exchanges between the children with severe handicaps and their peers. The cameras and microphones were positioned as close as possible to the play area, but far enough away so that the large amount

of ambient sound drowned out conversations. It was difficult to discern the details of conversations. Isolating children from others during the video-taping may have helped counteract this problem, however, it would have changed the environment from a simulated recess to an isolated playtime.

It was also difficult to observe and interpret visual nuances. Many times, the children may have exchanged brief glances that were difficult to observe as the camera had to be placed sufficiently far away from the children so as not to sensitize the children to its presence or otherwise interfere with the interactions.

Given these limitations, the observations describing the manner in which children with severe handicaps interacted with their peers, must be used with caution. A more detailed analysis of the manner in which the children interact with peers is required. Brinker (1985) has suggested that more research focus on the specific interactions across a variety of school settings accessible to children with severe handicaps.

Several characteristics of the social behavior of

children with severe handicaps were noticed including, not initiating social interactions with others, engaging in inappropriate behaviors, and not responding to social cues. However, this study demonstrated that children with severe handicaps do display some social skills when they are paired with peers, such as responding to social initiations, engaging in turn-taking, and modeling.

Gaylord-Ross and Pitts-Conway (1984) suggested that children with severe handicaps may acquire more social skills when they are able to imitate others. Social skills are often learned through experience in social settings and by imitation. Opportunities to imitate appropriate models may be necessary for children with severe handicaps even though the role of incidental imitation in the acquisition of skills by children with severe handicaps is not well understood.

Much of the research in the area of integration has focussed on direct teaching of social skills to children with severe handicaps using peers as tutors or models where the contact is organized by adults. Gaylord-Ross, Stremel-Campbell, and Storey (1986)

suggested that formal and incidental contact is needed between children with severe handicaps and their nonhandicapped peers. Gaylord-Ross, Stremel-Campbell, and Storey (1986) emphasized the importance of integrated settings for making friends and acquaintances, making contact with role models, developing positive perceptions of children with severe handicaps, and building the self-concepts of children with severe handicaps.

In future, the importance of informal or incidental contact between children with severe handicaps and their nonhandicapped peers in the development of social skills needs to be examined. This study found that pairing children with severe handicaps with their nonhandicapped peers at recess does have positive outcomes for children with severe handicaps. Nonhandicapped partners provided the severely handicapped subjects with many opportunities to interact. It is certain that this study influenced the length of time handicapped and nonhandicapped children interacted, and to some degree, the perseverance of the nonhandicapped partners to engage

the handicapped children in interactions, because it was organized to be a research project. All participants were given the same directions to play with their partners. The extent to which the conditions of this study influenced the interactions between the nonhandicapped and handicapped students is not known. One of the nonhandicapped partners mentioned to the investigator that she liked coming to recess to help with the handicapped kids, and that she had fun at the same time. Investigation into long-term outcomes of children with severe handicaps in regular schools may supply information on the value of incidental interactions between children with severe handicaps and their nonhandicapped peers.

Some of the concerns with research in this field are in the areas of generalization of effects and practical application to average school programs. The results of this study are promising for implementing an integrated recess program. Often teachers are too busy to develop elaborate integration projects, or are unaware of how to approach the implementation of integrated activities. Recess is a common activity

that can easily be used with benefits to the children. Using routine activities throughout the school day for beginning integration provides opportunities for interaction between handicapped and nonhandicapped children (Stainback & Stainback, 1982), provides opportunities for staff to observe nonhandicapped children so staff can select functional social skills for handicapped children to learn (Hemphill, 1983), and ensures that the social skills handicapped children are learning can be practiced in the settings where they are needed (Noonan, Hemphill, & Levy, 1983). Support is also emerging for reinforcing social skills training with practice in environments where the skills are used (Certo & Kohl, 1984; Gaylord-Ross, Stremel-Campbell, & Storey, 1986; Sailor, 1989).

Pairing nonhandicapped children with children who have severe handicaps can be easily facilitated by requesting volunteers or having a classroom of elementary students assume an integrated recess program as a project for a year. Noonan, Hemphill, and Levy (1983) have demonstrated positive outcomes for

integrating children with severe handicaps into schools through the assistance of "special friends."

Replicating the format of this study in different settings within the school day and under different conditions would give more information about the frequency of interactions between students with severe handicaps and their peers in other settings. Changing the nature of the groups could answer questions about the size of peer groups and the mixture of children in the group. Changing the nature or purpose of the group could answer questions regarding specific activities or curricula areas where heterogeneous groupings of students would be most beneficial for interaction.

This study was designed to focus on interactions between students with severe handicaps and their handicapped and nonhandicapped peers during an unstructured, free play, recess period. One of the major limitations was the small and diverse sample involved in the study. It is difficult to select a small number of students who have severe handicaps that are representative of the population of people with severe handicaps at large. Generalization to the

larger population of students with handicaps is not recommended without considering the specific sample in this study. For the four students in this project, the results hold promise for developing integrated experiences with their nonhandicapped peers during recess.

With this small, diverse sample, it is difficult to assess the effect that experience in previous group settings with peers had on the results of this study. Exactly how the experience influences the students' behavior is not well understood. Gaylord-Ross, Stremel-Campbell, and Storey (1986) have suggested that the more experience with peers, the more proficient students become with social skills. With this in mind, the researcher must be sensitive to how the results of this study are used and interpreted. Making general interpretations with results from research with a small population is limited at best.

The observations from this study add to the literature on the merits of placing children with severe handicaps in environments with nonhandicapped peers. Each of the four subjects interacted more with

nonhandicapped partners than they did with handicapped partners. Similar results were found in the Brinker (1985) study with a large group of children who had severe handicaps, and in the Guralnick (1980) study with preschoolers.

Education for children with severe handicaps is experiencing a change towards educating children with severe handicaps in schools with regular education students. Support for the argument put forth by Brown and his colleagues that all children should be educated in their least restrictive environment (Brown, Branston-McClean, Baumgart, Vincent, Falvey, & Schroeder, 1979) may be beginning to emerge . This study showed that for four students with severe handicaps, pairing with nonhandicapped peers at recess provided more opportunities for social interaction than pairing with peers who had similar disabilties. The results of this study are encouraging for educating children with handicaps in regular schools where there are opportunities for both handicapped and nonhandicapped students to interact.

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Appendix

Appendix

Materials

2 large grey mats

1 large blue mat

1 climbing apparatus with slide

5 large physio balls - 2 red, 1 blue, 1 yellow, 1 green

1 plastic bowling ball with 5 bowling pins

1 plastic ring toss game that included 5 plastic rings and 1 plastic ring catcher

1 red plastic basket filled with 4 small balls

1 blue plastic basket filled with 6 medium sized balls - 2 blue, 2 multicolored, 2 black and white

1 basket ball net attached to wall

1 yellow wedge

2 blue physio rolls

1 dog hand puppet

1 small car, yellow and red

1 plastic square for climbing in and out of

1 small teeter-totter, yellow